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A
DISCOURSE
OF THE
BACONIAN PHILOSOPHY,
BY
SAMUEL TYLER,
OF THE MARYLAND BAR.

It ought to be eternally resolved and settled that the understanding cannot decide otherwise than by Induction, and by a legitimate form of it.

Bacon's Works, 3rd. Vol. page 340, Am. Ed

Num fingo? num mentior? cupio refelli: quid enim laboro, nisi ut veritas in omni quæstione explicetur?

Cicero, Tusc. Disp. Lib. 3d. page 105, Glas. Ed.

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APRIL, 1940

DEDICATION.

TO DR. GRAFTON TYLER, GEORGETOWN, D. C.

Beloved Brother:—Our pleasures and our interests have always been so identified, that I cannot but desire that your name may be associated with mine, in a work which has amused so many of my leisure moments, and made it necessary that I should look over some of the ancient Greek and Roman authors, where almost every page suggested to me the time when we first read them over together, and like our play-grounds, brought back to my mind, the happy days of our youth. To you then, whom of all men, God has made nearest to me, in that we are the only children of our parents; and as the nearness of our relation has been so excellently illustrated in your brotherly love, which has contributed so much to my happiness through our childhood, and our youth, and increases as we walk up the hill of life together, I dedicate these reflections of my leisure hours, hoping that the doctrines set forth, may receive the sanction of a judgment, that is so certain a measure of truth as yours.

Your brother,

SAMUEL TYLER.

Frederick, Md., March 16th, 1844

TABLE OF CONTENTS.

PREFACE.

PART THE FIRST.

THE INFLUENCE OF THE BACONIAN PHILOSOPHY.—Some one nation always at the head of the rest. England at the head of modern civilization. In modern civilization there have been three great revolutions: the religious, the philosophical and the political. The philosophical revolution originated in England. Lord Bacon stands at the head of this movement. The object of this revolution. Bacon's writings—their publication and their circulation.—Royal Society of London. The leading discoveries of the physical sciences made in England. These discoveries enumerated, and the method of their discovery pointed out. These discoveries objects of the most delightful contemplation. Contrasts between the physical discoveries of the ancients and the moderns as objects of intellectual contemplation. Baconian philosophy practical. The application of its discoveries to the mechanic arts. The benefits conferred on England by the Baconian Philosophy. This philosophy not confined to physical nature: but embraces intellectual and moral science. The opinion that this philosophy leads to a mean standard of beauty, refuted; and the question examined at large both by philosophical analysis and historical fact. English literature exam-

ined, and its distinguishing features pointed out. The opinion that the Baconian philosophy leads to materialism and atheism refuted. The Baconian philosophy likely to form the type of universal civilization.

PART THE SECOND.—CHAPTER I.

THE BACONIAN METHOD OF INVESTIGATION.—
The Aristotelian logic. The reasoning process in its form, is the syllogism. All reasoning proceeds by comparison. The fundamental principle of the syllogism. Bacon did not design to teach a new mode of reasoning, but a new method of investigation. The a priori method of investigation nothing more than a misapplication of the Aristotelian logic. The influence of the a priori method of investigation upon philosophy. Bacon appears. His Instauration of the sciences. The *Novum Organon*, its object, the spirit of its philosophy, and the nature of its method of investigation. This method called Induction. It is the reverse of the syllogism. Analysis and synthesis considered, and both shown to be inductive processes. The application of mathematics to the inductive sciences considered. Induction carried on by principles of evidence and not by principles of logic. The nature of analogy considered. The inductive process founded on analogy. Philosophical analogy different from Rhetorical analogy. The great fundamental principle of philosophical evidence developed; and it is shown to bear the same relation to induction that the fundamental principle of logic does to the syllogism. Whether Bacon discovered the inductive process considered.

PART THE SECOND.—CHAPTER II. 189

THE THEORY OF MIND ASSUMED IN THE BACONIAN METHOD OF INVESTIGATION: Only two theories of mind, the theory of innate ideas, and the theory, that all our knowledge is founded ultimately upon experience. The theory of innate ideas, is the theory of mind assumed in the a priori method of investigation; and the theory, that all our knowledge is founded upon experience, is that assumed in the Baconian method of investigation. Plato the leading Philosopher amongst the ancients, and Des Cartes amongst the moderns, who maintained the theory of innate ideas. Both these Philosophers maintained the a priori method of investigation. Bacon's theory of mind, the same with that of Locke and Reid. They all maintained the theory that all our knowledge is founded upon experience. Locke solved the fundamental problem of psychology; and Reid developed the fundamental laws of thought. The Baconian method of investigation the psychological correlative of the theory of mind that all our knowledge is founded ultimately upon experience. The theory of mind taught in the sacred scriptures. The Baconian method of investigation traced up to the first impression made upon the senses.

PART THE THIRD. 21

NATURAL THEOLOGY: ITS PLACE AMONGST THE SCIENCES, AND THE NATURE OF ITS EVIDENCE: Natural Theology a branch of the inductive or Baconian philosophy. The errors of Lord Brougham's discourse of Natural Theology pointed out. The place

of Natural Theology amongst the sciences and the nature of its evidences pointed out by Bacon.

Hume's essay on a special Providence and a future state considered. The error of the essay shown to consist in confounding a mere physical casue with an intelligent creator. This error shown to lie at the foundation of all atheistical arguments. The evidences of Natural Theology traced up to the idea of causation developed in consciousness.

P R E F A C E .

The Baconian Philosophy is emphatically the philosophy of protestanism. Luther denounced the Aristotelian logic, because it was the foundation of the scholastic theology, the frame-work which supported its superstructure, and the cement which held together all its parts. And Bacon denounced it, because it was the foundation, and frame-work and cement of the a priori philosophy. Protestant christianity and the Baconian philosophy originate in the same fountain, and flow together in the same channels. And it is very remarkable that just now, so much attention is directed to the two great revolutions of modern times—the religious revolution effected by Luther, and the philosophical revolution effected by Bacon. Two more elaborate histories of the reformation than any ever submitted to the world, are now being written, and are nearly completed,—the one, by D'Aubigne in Switzerland, and the other, by Ranke in Germany. The first, as far as completed, has been translated into english, and published and read with the deepest interest over all Great Britain, and has been republished and read more extensively, in this country, than almost any other book. And from the high reputation of Ranke, and the absorbing interest of the subject, his history will doubtless soon be translated into english, and circulated through all the multiplied channels of publication. And thus the most animating interest in the great theme, will be kept alive. And within a

few years, Montagu's edition of Bacon's complete works, with translations of those written in latin, which had engaged the attention of the editor more than twenty years, has been published in England, and is now republished in this country; and the popular publications of England, and the great periodicals of both that and this country, have been for a long time teeming with commentaries and expositions of the Baconian philosophy. The mighty spirit of modern civilization appears to be stirring up society anew, by rehearsing the history of its triumphs, and proclaiming again to the world, its great doctrines. It seems to be gathering up its strength, for a new onward movement.

Impelled, by the same influence which is operating upon so many minds in the different nations of christendom, we have endeavored in this discourse, to exhibit a popular and succinct, but yet a more thoroughly developed exposition of the Baconian philosophy than any which has appeared.

In the first part of the discourse, we have set forth, as the leading truth, that the Baconian philosophy has for its primary object, the investigation of the laws of the material world, and the application of these laws, through the instrumentality of the useful arts, to the physical well-being of man. That this philosophy does not think it beneath its dignity, to solve the homely problems: "What shall we eat, and what shall we drink, and wherewithall shall we be clothed?" But admitting, that philosophers like other people, must feed their hunger and clothe their nakedness, it teaches how to make with more facility and in greater

abundance, the food and raiment necessary for our bodies, and proclaims not in whispers, but in its very loudest accents, that Franklin did not more fully exemplify the true spirit of philosophy when he brought down fire from heaven, than Fulton did, when he yoked it to the car of commerce.

And as England originated the great philosophical movement of which we are speaking, and stands at the head of modern civilization, we have cited the chief discoveries in the sciences made by the Anglo-Saxon race, and then showed how these discoveries, by their application to the useful arts, have extended the dominion of man over the empire of nature, and in this way conferred on England so much wealth and power. And we might well have added to the other instances of discoveries made by the English, that of vaccination by Jenner—a discovery which has saved the lives of hundreds of thousands of the human race; and rescued youth and beauty from the loathsome embraces of a disease, which even when it spares the life of its victim, leaves upon him forever, the indelible marks of its malignity. This discovery affords a signal instance of that utility, to which the Baconian philosophy applies all its discoveries; and is worth all the discoveries of the ancient philosophies put together; and constitutes a more glorious crown than any ancient sage ever wore.

After thus showing the connection of the Baconian philosophy with the useful arts, and how much it has through them, contributed to the physical comforts of man, we next show that this philosophy does not lead to a selfish morality, as some have alleged; but that

in all its principles, and in all its aims, it tends to produce a noble and disinterested morality. The next question discussed is the bearing of this philosophy upon the arts of beauty; and it is shown by an analysis of its fundamental principles, that it maintains a most exalted ideal. And this fact is further proved and illustrated, by spreading out in microscopic view, the literature of England with all its rich and various and masculine beauties, which has grown up under the influence of the spirit of this philosophy.

We must defend this philosophy from the charge of materialism and atheism with which it is so often assailed, and show that this charge has no foundation either in its principles or the influence which it has actually exerted upon the opinions of men; for that the nation which has most assiduously cultivated it, has also done more to advance the doctrines of natural theology, than any nation known to history.

We conclude this part of the discourse, by showing that the Baconian philosophy is not like the ancient philosophies adapted to the culture of one epoch and one people only; but that like christianity it is catholic in its spirit and equally suited to all times and to every people, and that it is likely to extend its blessings to all nations, and gather them under its wings as a hen doth gather her chickens.

In the second part of the discourse, we enter upon the consideration of the Baconian method of investigation. This part is divided into two chapters. The first chapter treats in the first place, of the Aristotelian Logic, and shows that it analyses the reasoning process, and developes the form in which every argument

passes through the mind, and that this form is the syllogism. It then shows, that the truth of the conclusion of an argument is always assumed in the premises, and is not in reality a new truth : but merely a particular instance of a general truth already known, and stated in the premises. It is then shown that the *a priori* method of investigation is nothing more than a misapplication of the Aristotelian logic as a method of investigation. The effect of this misapplication upon ancient philosophy, is then shown, and the peculiar errors produced by it, pointed out. This effect is then traced down through the middle ages of European history, and the futility of the philosophy of that period is signalised.

We next enter upon the consideration of the method of investigation taught by Bacon in the *Novum Organon*, and show that it is just the reverse of the syllogistic method of Aristotle, which had been previously used. It is shown that the Baconian method of investigation proceeds from particulars to universals, and that the syllogistic or *a priori* method proceeds from universals to particulars. And it is shown that the Baconian method of investigation is not a process of reasoning at all—is not carried on by rules of logic : but is carried on by rules of evidence. And that though the mathematics are applied to the verification of the inferences of induction in the physical sciences, that still this does not take those sciences out of the pale of induction and put them within the precincts of reasoning : the reasoning process being in such application of the mathematics, a mere touch-stone to test the truth of the inductive conclusions, and not to

elicit any new conclusion not already reached by induction. Analysis and synthesis are also considered; and are shown to be in the sciences of contingent truth, inductive processes and not processes of reasoning, and that they are what Bacon called the ascending and descending processes of induction. And as we show that induction is carried on by means of principles of evidence and not by principles of logic, we enter upon the consideration of the nature of philosophical evidence; and show that all evidence may be divided into analogy and identity; and that the whole inductive process, as long as that process is founded on mere probability, no matter how great is the probability, proceeds on analogical evidence. And we show that all the great discoveries in physical science have been made by the evidence of analogy. We then distinguish between philosophical analogy, and rhetorical analogy; and show that the distinction is an important one, and that for want of this distinction men have continually fallen into error. And finally we evolve out of our analysis of the inductive process, the great fundamental principle of philosophical evidence, which bears the same relation to induction, that the *Dictum de omni et nullo* of Aristotle, does to the syllogism. And thus we have rendered induction just as systematic as Aristotle did the syllogism. And surely it is much more difficult to develop a principle which shall embrace in its application the innumerable particular instances which occur in every science or department of nature, and show the connection between them and the inductive inference properly inferrible from them, than it is to develop a principle which shall show the

connection between the premises and conclusion of an argument: and therefore such a principle is so much the more important.

Mr. Macaulay in his celebrated review of Bacon's writings seemed to think that no such principle as the one just mentioned could be developed—that no precise rule can be given marking the difference between instances from which a sound inductive inference can be drawn, and instances from which such an inference cannot be drawn. And with a levity characterised more by the spirit of a coquette, than of a philosopher—with strong words and weak arguments—he has attempted to ridicule by the *reductio ad absurdum*, the value of Bacon's delineation of the inductive process in the second book of the *Novum Organon*. He amuses himself, and as he supposed, his readers too, with a ludicrous caricature of the inductive process, in showing that it is by that process that a man finds out that he has been made sick by the mince pies which he had eaten. It would have been quite as philosophical, to have attempted to depreciate the inductive process, by showing that it was by that process, that *Hudibras* arrived at the conclusion that it was not necessary to have more than one spur; because he had ascertained by actual experiment, that one side of his horse could not move without the other, and that therefore, if one spur could make one side go, it would make the other go too. Mr. Macaulay well knows that ridicule is not argument. And doubtless he would readily perceive, that the fact, that *Hudibras*

———“by geometric scale,
Could take the size of pots of ale;
Resolve by signs and tangents, straight,
If bread or butter wanted weight,”

does not detract from the dignity of Newton's *Principia* or prove that the rules of geometry are useless. And yet he does not perceive the folly of attacking by ridicule, the development of induction which Bacon has given in the second book of the *Novum Organon*. But smitten with the ambition of critical display, he sacrifices truth to rhetoric. And in his attempts to reduce to absurdity, the reasonings of others, he plunges into that predicament himself. Flying upon the wings of antithesis, and in his onward course showing first one wing of the antithesis and then the other, in order that his readers may admire their brilliancy and their contrast, and more intent upon the grandeur of his flight than the point to which he is moving, he is sometimes carried to the most preposterous conclusions. And on the point which we are now examining he goes the whole length of declaring that grammar and logic and rhetoric are useless studies. When it is a knowledge of these very studies, which has strengthened and plumed his own wings, and enabled him to soar aloft so boldly and gracefully, that we cannot but admire his flight, even when it is beyond the regions of truth and common sense.

But not content with ridiculing induction by general remarks, Mr. Macaulay, as if to signalise its absurdity, ridicules it in all its details, until his criticism rivals in the minuteness of its anatomy, the celebrated curse which Dr. Slop, at the request of Mr. Shandy, read aloud, to the so great horror of my uncle Toby. "We have heard (says he) that an eminent judge of the last generation was in the habit of jocosely propounding after dinner a theory, that the cause of the prevalence

of Jacobinism was the practice of bearing three names. He quoted on the one side Charles James Fox, Richard Brinsley Sheridan, John Horne Tooke, John Philpot Curran, Samuel Taylor Coleridge, Theobald Wolfe Tone: These were *instantiæ convenientes*. He then proceeded to cite instances *absentiae in proxime*:—William Pitt, John Scott, William Wyndham, Samuel Horsely, Henry Dundas, Edmund Burke. He might have gone on to instances *secundum magis et minus*. The practice of giving children three names, is more common in America than England. In England we have a King and a House of Lords, but the Americans are republicans. The *rejectiones* are obvious. Burke and Theobald Wolfe Tone were both Irishmen; therefore the being an Irishman, is not the cause of Jacobinism. Horsely and Horne Tooke were both Clergymen; therefore the being a clergyman, is not the cause of Jacobinism. Fox and Wyndham were both educated at Oxford; and therefore the being educated at Oxford, is not the cause of Jacobinism. Pitt and Horne Tooke were both educated at Cambridge; therefore the being educated at Cambridge is not the cause of Jacobinism. In this way our inductive philosopher arrives at what Bacon calls the *vintage*, and pronounces that the having three names is the cause of Jacobinism."

"Here is an induction corresponding with Bacon's analysis, and ending in a monstrous absurdity. In what, then does this induction differ from the induction which leads us to the conclusion that the presence of the sun is the cause of our having more light by day than night! The difference evidently is not in the

kind of instances, but in the number of instances; that is to say, the difference is not in that part of the process for which Bacon has given precise rules, but in a circumstance, for which no precise rule can possibly be given." Now we join issue with Mr. Macaulay and say that it is the *kind* of instances as well as the *number* of instances which constitutes the difference between the two cases which he puts. For if the instances of the three names had been as numerous as the whole Jacobin party, though it would have been a marvellous coincidence, yet no man in his senses would have believed that the bearing three names was the cause of the prevalence of Jacobinism; and simply because, the instances are not of the *kind* from which an inductive inference can be drawn: they being the mere coincidence of chance, and not kindred facts conjoined by a law of nature. It is true that if every Jacobin had borne three names, it might have been inferred that there was some cause for such a conjunction of facts—that their parents, perhaps, from some common motive gave their children three names, just as the old Puritans from a common motive, gave their children *whole verses of scripture* for names. But under no circumstances whatever could it be inferred that the bearing three names was the cause of the prevalence of Jacobinism. The fact that the presence of the sun is the cause of more light by day than night is a fact in nature, and is supported as every fact in nature always is, by innumerable analogies. But is the naming children a fact in nature—a work of the Creator? Is the bearing three names and the being a Jacobin, a relation established by the Creator of the uni-

verse? Is there any analogy in nature from which it can be inferred that the one is the cause of the other? Certainly none. It might as well be supposed that the wearing pantaloons is the cause of one person's being a man, and the wearing petticoats, the cause of another person's being a woman, as that the bearing three names is the cause of one's being a Jacobin.

This then is the difference between the two kinds of instances, and "the circumstance for which a precise rule *can* be given:" the one is the constant connection between two facts in nature, the other, the casual coincidence of two facts totally irrelevant, and dependent on the acts of man. Their difference is perceived intuitively, and therefore cannot be made plainer by illustration. Our remarks in the discourse, on analogy, appear to us, to throw light upon the subject.

Mr. Macaulay after exhausting his weapons of ridicule, becomes very serious, and says "that the difference between a sound and unsound induction, or to use the Baconian philosophy, between the interpretation of nature and the anticipation of nature, does not lie in this—that the interpreter of nature goes through the process analysed in the second book of the *Novum Organon* and the anticipator through a different process. They both perform the same process. But the anticipator performs it foolishly or carelessly; the interpreter performs it with patience, attention and sagacity, and judgement. Now precepts can do little towards making men patient and attentive, and still less towards making them sagacious and judicious." Now these sober remarks of Mr Macaulay are not entitled to

one tittle more respect as exhibitions of truth than those which we have been examining. Precepts of no use! Why; are not precept and example the only guide of man? and is not the whole force of example in its being the expression of a precept? The mere general precept which lies at the foundation of the Baconian philosophy, *that we should scrutinise with caution the phenomena of nature, before we draw our inferences*, has revolutionised philosophy; and yet it is gravely asserted, by one of the most brilliant writers, and adroit critics of the age, that precepts are useless in philosophical investigations, and in every thing else. We readily admit, that as long as induction is confined, to ascertaining what article of diet has made a man sick, or whether one side of a horse can move without the other, precepts are of very little use. But then, it must be remembered, that induction "resembles the tent which the fairy Paribanou gave to Prince Ahmed. Fold it, and it seemed a toy for the hand of a lady. Spread it, and the armies of powerful Sultans might repose beneath its shade." When it is the toy for the hand of a lady, we may use it without the aid of precepts, but when it is spread out so that the armies of powerful sultans may repose beneath its shade, we cannot manage it by our unaided strength.

Having thus, in the first chapter of the second part of the discourse, considered the Baconian method of investigation, in the second chapter, we consider the theory of mind assumed in that method. We show, there never has been, and that there never can be, more than two theories of mind; and these two theories are

the theory of innate ideas, and the theory that all our knowledge is founded ultimately in experience. We show that the theory of innate ideas is the theory assumed in the a priori method of investigation; and that the theory that all our knowledge is founded ultimately in experience, is that assumed in the Baconian method of investigation. It is shown that Plato was the leading philosopher amongst the ancients and Des Cartes amongst the moderns, who maintained the theory of innate ideas; and that both these philosophers maintained the a priori method of investigation. It is next shown that Bacon had a distinct view of the theory of mind that all our knowledge is founded ultimately in experience; and that this is the theory of mind which has been developed by Locke and Reid. We show that Locke solved the great fundamental problem of this theory of mind, and showed that all our knowledge originates in sensation and consciousness. And that Reid established this theory still more firmly by developing the great psychological laws which lie at the foundation of this theory, and which govern human belief in the knowledge derived through these original sources of information. He developed the law which governs our belief in the testimony of sensation, and the law which governs our belief in the testimony of consciousness. He also developed the law which governs our belief in the testimony of memory, and the law which governs our belief, that the future will be like the past, and that like causes will produce like effects. This last is the fundamental law of induction. And thus we trace up the Baconian method of investigation through the theory of mind which it assumes,

in every step of knowledge until we trace the process up to the very first impressions made upon the senses, and we show the psychological law for every act of the mind in the process. We have therefore in the two chapters of this part of the discourse, exhibited an outline of a complete system of logic in the largest sense of the term; and furnished in it a touchstone of philosophical criticism by which the reasonings of all philosophies may be tested.

Part III. In the third part of the discourse, we apply the second part by way of philosophical criticism, to Lord Brougham's Discourse of Natural Theology, and Hume's Essay on a special Providence and a future State. We show that Lord Brougham in the very outset commits a logical blunder, which vitiates much of his subsequent reasonings. And that he does not solve the problem which he has proposed to himself: but that he always dodges it, or passes it over, by a mere assertion. We show that this results from his overlooking some of the logical and psychological principles which we have developed in the second part of our discourse. We then show how, by an application of these principles, the problem which Lord Brougham has proposed to himself can be solved. We next show that the great doctrine of Lord Brougham's discourse, that Natural Theology is a branch of the inductive or Baconian philosophy, and is founded on the same sort of evidence as that philosophy, had been distinctly advanced by Bacon, and set forth with the most accurate discrimination; and from the fact that Brougham comments in his discourse upon this portion of Bacon's writings, we are at a loss to determine

whether he could have misunderstood Bacon, or whether he wished to pervert Bacon's doctrine, in order that he might have the credit of having first shown the true place of Natural Theology amongst the sciences.

After having examined Lord Brougham's discourse, we proceed to examine Hume's Essay on a Special Providence and a future State; and we show by an application of the psychological and logical principles developed by us in the second part of the discourse, that the whole fallacy of Hume's doctrine consists in his confounding an intelligent Creator with a mere physical cause. And we show that this is the clue by which the sophistical labyrinths of his argument are to be traced. As soon as the distinction between an intelligent Creator and a mere physical cause is applied to Hume's reasonings, his whole argument point after point, falls to the ground, as if touched by the wand of a talisman; and we feel astonished that the essay should, by the apparent strength of its fortresses, have so long kept off the attacks of natural theologians; and should at this day be considered so formidable as to lead Lord Brougham to remark that, "we may rather conclude that it is not very easily answered, because in fact it has rarely if ever been encountered by writers on theological subjects." And it is remarkable that no writer on natural theology, as well as we can recollect, has shown the importance (in our reasonings on natural theology) of the distinction between an intelligent Creator and a mere physical cause, and yet it is the confounding of so obvious a distinction that has caused the chief difficulty on this subject. We

have shown that with this distinction there is no difficulty whatever in maintaining on the principles of the inductive philosophy, the truth of natural theology: but that without this distinction, natural theology must fail.

We have then, in the first part of the discourse, shown the nature of the Baconian philosophy; in the second part we have shown the Baconian method of investigation, and the theory of mind assumed in that method; and in the third part we have shown how, by the application of the logical and psychological principles developed in the second part, it may be used as a touchstone of philosophical criticism. And all we ask of the reader is, that he will not read one part of the discourse without reading the whole; as the discourse is arranged in a sort of perspective, so that every part casts light upon the others, and it is impossible to see the full import of either part, without reading them all.

ERRATA.

Page 7 in the 13th line, for "discoveries," read "discovery."

" 29 in the 5th line, for "id" read "in."

" 29 in the 9th line, for "psylosophy" read "philosophy."

" 84 leave out one entire sentence commencing on the 17th line and ending on the 23rd.

" 118 in first line, for "this" read "the."

" 130 in 10th line, for "process" read "processes."

" 178 in 17th line, for "style" read "sty."

PART THE FIRST.

INFLUENCE OF THE BACONIAN PHILOSOPHY.

IN every age of the world, since the human family has been so numerous as to be divided into separate communities, some one nation has exerted a predominant influence over the rest. This appears to be the economy of civilization. The Grecian Republics, (for they all were but one nation,) and Rome, in their successive order in history, have, of all the nations of antiquity, exerted the most important influence on the destinies of man. But, in modern times a new order of civilization has arisen; and for more than two centuries, England has stood at the head of this new order of things. Enthroned upon the riches of a universal commerce, enlightened by the knowledge of every science, armed with the power, and accomplished with the embellishments of every art—baptized into the spirit of Christianity, she is influencing and controlling the destinies of the human race towards a glorious consummation.

In the progress of this civilization, there have been three great revolutions, the religious, the philosophical, and the political. After the human mind had thrown off the coercive authority of the Romish Church, the

moral authority of the ancient philosophers still remained; and what Luther did in the emancipation of the mind from the first, Bacon did in the emancipation of the mind from the last. Luther burnt the Pope's bull in 1520, and Bacon published his *Novum Organon* in 1620. The religious revolution, therefore, preceded the philosophical, and both of these, the political. Not, however, that these revolutions did not move on simultaneously; but, that in their progress, they were in advance of each other, in the order which we have indicated. Though they grew together they differed in maturity. Their crises were successive. Perhaps, the divine wisdom is displayed in this order of things—perhaps any other order is impossible in the moral economy of the world: it being necessary that the restraints upon man, should be thrown off, not all at once, but separately, as he advances in mental and moral improvement. These then, are the movements, which Europe has made in civilization. She has thrown off religious despotism, she has thrown off philosophical despotism, she has thrown off political despotism. And she has advanced to this position, through many a bloody agony. The treasures of the industry of ages have been spent, the chivalry of thousands of heroes, the studies by day and by night of scholars and philosophers, the genius of poets exhibiting in their compositions those actions which ennoble the soul, the patriotic and humane sentiments of orators clothed in the thunders of impassioned diction—all these have been spent in purchasing the civilization of modern Europe. It becomes then, an important inquiry to ascertain the character of the philosophy of that people, into whose keeping,

so far as human agency is concerned, the destinies of Europe appear, in the progress of history, to have been confided by divine providence.

We will, therefore, pass over the religious and political revolutions, and even the literature of modern times, and confine ourselves entirely to the philosophical revolution which originated in England, and which is exerting so important an influence over the destinies of man, through the agency of that great people.

We propose, then, to sketch the rise and progress of the most wonderful philosophical revolution, and the most glorious in its results upon the pursuits and happiness of man, of any within the whole history of the world. We propose to give some account of the philosophy of utility—the philosophy of lightning rods, of steam engines, safety lamps, spinning jennies and cotton jins—the philosophy which has covered the barren hills and the sterile rocks in verdure, and the deserts with fertility—which has clothed the naked, fed the hungry, and healed the sick—the philosophy of peace, which is converting the sword into the pruning hook, and the spear into the ploughshare. This is the philosophy of which we propose to give some account.

It was Lord Bacon, who launched the human mind upon this new career of discovery. He is the great reformer, who stands at the head of the teachers of this philosophy. Physical nature seemed perfectly impenetrable to the acutest intellects of the ancients. They could not get over even the threshold of physical science. Indeed, they cannot be said to have had any natural philosophy at all; so absurd were all their doc-

trines about physical nature. Neither did the philosophers of the middle ages, with all their assiduity, succeed in exploring this field of knowledge. And, though the discoveries of Copernicus, Kepler, Galileo and Tycho Brahe show that Providence was preparing the way for a new era in physical science, and even the discoveries of Roger Bacon in the thirteenth century indicate the same fact, yet it remained for Lord Bacon to generalize the idea which philosophers were beginning to see obscurely and in single instances, and to reveal to the philosophical world, what it had been prepared to comprehend:—That true philosophy must be connected with the arts, that while it satisfies the highest faculties of the speculative intellect it may be applied to the physical wants, and the general well-being of man. That living as we do in a world where general and permanent laws obtain, and under their dominion, it is the object of natural philosophy to ascertain these laws, in order that we may not, in our endeavours to promote our comforts, act against these laws, and thus attempt impossibilities; and also, that “these laws are not only invincible opponents, but irresistible auxiliaries.” Bacon wished to make every power of nature work for man, the winds, the waters, gravity, heat and all the mighty energies, which lie like the fabled giants of old under the mountains. These he wished to unloose from their fetters, and bring as servants under the dominion of man. Such are the grand conceptions which Bacon proclaimed to the world.

Scarcely had Bacon published his writings before they were republished upon the continent of Europe. The treatise *De Augmentis* was republished in France in

1624, the year after its appearance in England; and it was translated into French in 1632. Editions were also published in Holland in 1645, 1652 and 1662. The *Novum Organon* was thrice printed in Holland, in 1615, 1650 and 1660; and men of every cast in the higher walks of life on the continent of Europe were conversant with his writings. Gassendi, Des Cartes, Richelieu, Voiture, and at a later period Leibnitz, Boerhave and Puffendorf were loud in his praise. Indeed, his fame spread beyond the bounds of his own country, more rapidly than that of any philosopher within the whole history of letters. What an impulse, then, must the philosophy of Bacon have given directly and indirectly to the progress of the human mind upon the continent of Europe! for its advances there, have been made by pursuing the Baconian method of investigation. But let us see the progress of his philosophy in England, and cite some examples of the leading discoveries which have been made by the Anglo-Saxon race.

Not long after the death of Lord Bacon, in 1626, the Royal Society of London was established for the promotion of the sciences, and all England resounded with his praise. The philosophers of England almost adored his genius. They felt that he had a true English mind. That he was the father of English philosophy. That the English mind had at last given to it a method of philosophizing suited to its practical and common sense turn. And, behold the results, written upon the glorious records of English philosophy!

In every department of physical science, England has made the leading discoveries; and other nations,

though their scientific labours have been so brilliant, have done little more than extend her researches and verify her theories. In physiology, the two greatest discoveries were made by philosophers of the British isle. Harvey discovered the circulation of the blood, and published his treatise *Exercitatio de motu cordis*, as early as 1628. He was the cotemporary and intimate friend of Bacon. Sir Charles Bell discovered that there are two distinct sets of nerves, those of sensation and those of motion. And it is worthy of remark that both these great discoveries, so important to medical science, were discovered by considerations founded upon the evidence of final causes. Harvey discovered the circulation of the blood, by reflecting on the use of those valves in the veins whose structure is such as to prevent the reflux of the blood towards the extremities. And Sir Charles Bell tells us in a note to his *Bridgewater treatise* on the hand, that the views taken of the nervous system in the chapter of that work on "Sensibility and Touch," where the uses and endowments of the different nerves are considered, guided him in his original experiments by which he established the great doctrine, that there are two sets of nerves pervading the whole animal system. Modern medicine also may be said to have arisen in England. Sydenham, who had maturely studied Bacon's writings, laid the foundation of the science of medicine by pointing out, both by precept and example, the true method of observing the symptoms of disease, and of applying curative means according to the natural indications. Since his time, medicine has, by the aid of its auxiliary sciences, made rapid progress: but still his work

are of much value, even yet, on account of their profound general views. And John Hunter may be said to have originated the sciences of comparative anatomy and physiology, by bringing experiment into the study of these branches of knowledge, thereby showing how to lay open the great mysteries of the human organization. Surgical and medical pathology, which before his time were entirely conjectural, assumed from his principles a more positive character. In chemistry too, the greatest discoveries have been made in England. The laws of chemical combination, which are of so much practical as well as scientific utility, and are perhaps the most important discoveries in physics, except the law of gravity, were discovered by Dalton. The composition of water, the knowledge of which is an element in so many chemical reasonings as to render it one of the most prolific of chemical discoveries, was discovered by Watt, and confirmed or verified by Cavendish, who burnt oxygen and hydrogen in a dry glass vessel, when a quantity of pure water was generated equal in weight to that of the gases which had disappeared in the formation of the water. The doctrine of latent heat, which is so important a chemical truth, as to be the salient point of many chemical discoveries, was discovered by Dr. Black of Edinburgh. The discovery of the metallic bases of the alkalies and earths was made by Sir H. Davy, who contrived an apparatus to collect and condense the galvanic electricity, and thereby applying this powerful agent in chemical analysis. The first inductive generalisation ever made in electricity, was made by Grey and Wheeler of England, who discovered that some substances are con-

ductors and others non-conductors. And the great truth that the lightning of Heaven is identical with electricity was discovered by one speaking the English as his vernacular language. Franklin, by the beautifully simple apparatus of a kite having a key attached to the lower end of a hempen cord, and being insulated by means of a silken thread, by which it was fastened to a post, demonstrated that the electric fluid and lightning are identical. The kite was raised, while a heavy cloud was passing over, and after some time, the loose fibres of the hempen cord began to bristle. Franklin touched the key with his knuckle, and the electric spark was received; and thereby the identity of electricity and lightning was verified. The fundamental truth of optics was also discovered in England. Newton discovered that a beam of light, as emitted from the sun, consists of seven rays of different colours possessing different degrees of refrangibility. This great discovery was made by darkening a room and boring a hole in the window shutter, and letting a convenient quantity of the sun's light pass through a prism. The light was so refracted by its passage through the prism, as to exhibit all the different colours on the wall, forming an image about five times as long as it was broad; instead of forming a circular image, according to the received laws of refraction at that time, and of a white colour, according to the nature of light as then understood. In order to ascertain the true causes of the elongation and colours of the image, Newton then placed a board with a small hole in it, behind the face of the prism and close to it, so that he could transmit through the hole any one of the colours, and keep back

all the rest. For example, he first let the red light pass through and fall on the wall. He then placed another board, with a hole in it, near the wall where the red ray fell, so as to let it pass through the hole in the second board, and then he placed a prism behind this board, and let the red light pass through it near the wall. He then turned round the first prism so as to let all the colours pass in succession through these two holes, and he marked their places on the wall, and he saw by their places, that the red rays were less refracted by the second prism, than the orange; the orange, less than the yellow, and so on, all being less refracted than the violet. From this experiment, Newton drew the grand conclusion that light is not homogeneous, but is composed of rays of different colours and of different degrees of refrangibility. But the greatest of all human discoveries, the universality of the law of gravity, the foundation of physical astronomy, was discovered in England. Copernicus had discovered the motion of the earth on its axis around the sun; Kepler, that this motion around the sun, is in an elliptical orbit, with the sun in one of its foci; and that an imaginary line drawn from the planet in its revolution, to the sun, describes equal areas in equal times; and that the square of the time that the planet takes in moving around the sun is equal to the cube of its distance from that body. This is the starting point where the discoveries of the English begin. It remained to inquire into the causes of these general facts which had been discovered by Copernicus and Kepler.

In the year 1666, Newton, while sitting alone in his garden and reflecting upon the nature of gravity which

causes all bodies to descend towards the centre of the earth, considering that this power suffers no sensible diminution at the greatest distances from the centre of the earth to which we can reach, being as great on the summits of the highest mountains as at the bottom of the deepest mines, conjectured that perhaps it extended further than was commonly supposed. He therefore began to consider what would be its effects if it extended to the moon. That the motion of the moon was affected by this power, he conceived to be beyond a doubt; and further reflection led him to suppose that this body might by this power be held in its orbit around the earth. For, though gravity suffered no sensible diminution at the comparatively small distances from the centre of the earth to which we can go, yet he thought it highly probable, that it was greatly diminished at the distance of the moon, and that it therefore did not cause that body to fall to the earth. And he inferred, that if the moon be held in its orbit by the principle of gravity that the planets also must be held in their orbits by the same power; and that by comparing the periods of the different planets with their distances from the sun, he might ascertain in what proportion the power by which they were held in their orbits decreased. By this process he arrived at the conclusion that it decreased in the duplicate proportion, or as the square of their distances from the sun. In order then to test the truth of the conclusion, that the law of the force by which the planets are drawn to the sun was that it decreased as the square of their distances from that luminary, he endeavored to ascertain if such a force emanating from the earth and directed

to the moon was sufficient to retain her in her orbit.— To do this, it was necessary to compare the space through which heavy bodies fall in a given time to a given distance from the centre of the earth, viz: to its surface, with the space through which the moon, as it were, falls to the earth in the same time, while revolving in a circular orbit; for in all his reasonings, he supposed the planets to move in orbits perfectly circular. At the time Newton made this calculation, he adopted the common estimate of the diameter of the earth, as then used by geographers and navigators, which was erroneous. Therefore his conclusions were erroneous also. Some years afterwards, the discovery that a projectile would move in an elliptical orbit, when acted upon by a force varying in the inverse ratio of the square of the distance, led Newton to demonstrate that a planet acted upon by an attractive force varying inversely as the square of the distances, will describe an elliptical orbit in one of whose foci the attractive force resides. But though Newton had thus established an hypothesis which explained the elliptical orbits of the planets, and this hypothesis was founded upon an induction of facts made by Kepler, and demonstrated by the application of mathematics by himself, yet an indispensable condition of the induction had not been fulfilled. He had not yet obtained any evidence that a force varying inversely as the square of the distance, did actually reside in the sun and planets; because his calculations for testing this, founded upon a comparison of the space through which heavy bodies fall in a second of time to a given distance from the centre of the earth, with the space through which the moon, as it were, falls to

the earth, in a second of time while revolving in a circular orbit, assumed an erroneous estimate of the diameter of the earth, as we have shown, and consequently did not test what it was intended to verify; but showed that the force which retains the moon in its orbit as deducted from the force which causes the fall of heavy bodies to the earth; is as *one-sixth* greater than that which is actually indicated in her circular orbit.— But M. Picard having in 1679 executed the measurement of a degree of the meridian, Newton afterwards deduced from it the true diameter of the earth, and trying his former calculation, he realized his expectations; and found that the force of gravity which regulates the fall of bodies at the earth's surface, when diminished as the square of the distance of the moon from the earth, to be nearly equal to the centrifugal force of the moon as deduced from her observed distance and velocity; and he thus fulfilled the fundamental condition of the inductive method of investigation, of always ascribing a cause known to exist, to explain an effect. By this course of reasoning Newton connected the physics of the earth with the physics of the heavens, and established the universality of the law of gravitation.

What more delightful employment can the speculative philosopher have than the contemplation of the grand discoveries which we have been considering!— To one who loves truth for its own sake, and feels delight in the mere contemplation of harmonious and mutually dependent truths, the knowledge of such great truths are of sufficient value to repay him for the labour of discovery, even if they did not admit of any

practical application. To know what it is that paints the beautiful colours of the rainbow, and covers the hills and valleys in green, and gives the delicate tints to the flowers which illuminate the fields; to know that the scathing lightnings which rush with such tremendous fury from the vast magazines of the heavens, is the same with the spark rubbed from the cat's back; to know that the water which we drink and which appears so simple, is composed of two gases, one of which is more combustible than gunpowder, and produces instant death when inhaled, and the other is the supporter of combustion, though the two united is the chief agent by which we extinguish fire; to know that the planets of such vast magnitude, and moving with such velocity through such boundless space are held in their orbits by the same force which causes an apple to fall to the ground; to know the times of eclipses and the returns of comets dashing with a velocity quicker than thought over millions of miles of space and returning with unerring certainty to the goal whence they set out: and all other wonders which natural philosophy reveals, must forever, as mere matters of intellectual contemplation, be considered as inestimable treasures. And the mere process of investigation according to the Baconian method, is one of the noblest and most delightful employments. The philosopher at almost every stage of his progress, is meeting with hints of greater things still undiscovered, which cheers the mind amidst its toil, with the hope of making still further progress; and new fields of discovery are continually opening in prospect and the light of his present discoveries throwing enough of their rays across the darkness

before him, to reveal as much of other new truths as will stimulate him to continued exertion for their discovery: thus curiosity is ever kept alive, and exhausted energies renovated in the laborious pursuits of knowledge.

How utterly insignificant as mere matters of intellectual contemplation, is all the physical philosophy of the ancients in comparison with these magnificent discoveries in the different sciences! And what can form a more striking contrast than the sublime argumentation of Newton and the petty sophistry of the philosophers of the middle age! What are the eloquent reveries of Plato and the ingenious reasoning of Aristotle in comparison with the mighty mensuration by which Newton beginning with the dust on the balance measures the earth, and rising in the sublime argument measures planet after planet and weighing them, balances one against the other, and not content with holding as it were, worlds in the hollow of his hands, he measures and weighs systems of worlds; and his mighty calculus still not exhausted, he balances system of worlds against system of worlds, and embraces in his argument the infinitude of the universe, until the words of the sacred poet, "he weighed the mountains in the scales and the hills in a balance," intended to describe the omnipotence of the deity, fall short in describing the power of one of his creatures. The wisdom of the Academy and the Lyceum have been overshadowed by the glory of Cambridge, and Greece yields to England in philosophical renown!

We see then, that as a mere matter of intellectual contemplation to satisfy the speculative mind, the Ba-

conian philosophy is preeminently sublime. We will now show that it is also eminently practical; and in this particular, it differs from all the philosophy of the ancients, who thought that the only use of philosophy, was in its influence upon the mind in elevating it above the concerns of life, and thus purifying and preparing it for the philosophical beatitude of their heaven, into which none, but philosophers were to enter; and that the practical affairs of life belonged to those of common endowments who are fated by destiny to be mere "hewers of stone and drawers of water." But far different is the spirit of the Baconian philosophy. Humbling itself before Christianity, it acknowledges it to be a revelation from heaven, pointing out the same way to future bliss, for the peasant and the philosopher, and that *it only*, has the power "to deliver man from the bondage of corruption into the glorious liberty of the sons of God;" and that though philosophy enlarges and elevates the mind and affords us unspeakable intellectual pleasure, yet that its chief office is to promote the general well-being of man in this life, by connecting the sciences with the arts, and arming them with a power which mere empiricism can never attain.

It is then the great excellence of the Baconian philosophy, that even those of its discoveries which have contributed most to the satisfaction of the speculative intellect and are apparently the most remote from everything like practical application to the comforts of man, have frequently been applied to the most useful purposes of life. The discovery of the nature of light by Newton, at once led him to attempt a practical application of it; and though nothing of importance

resulted from his labours, yet Hall and afterwards Dolland constructed achromatic telescopes, which could never have been done, if the fact of the different refrangibility of the different rays of light had not been known; and this discovery, was thus applied to the arts in accordance with the utilitarian spirit of the Baconian philosophy. Scarcely had Franklin discovered the nature of lightning, before he constructed an apparatus to protect our buildings on land and our ships on the sea from the ravages of the electric fluid. And thus by a discovery apparently so remote from all practical utility he disarmed the spirit of the storm of his thunders, and thereby showed to the world that knowledge is power. But the most fruitful practical applications have been made of chemistry. It has been applied to agriculture, to medicine, and to the mechanical arts.—By analyzing the nature of soils and applying the principles thereby ascertained, to the improvements of agriculture, it has made the most sterile waste so fertile, as to yield all the various fruits of the earth in the richest abundance. Where not a blade of grass grew, now the most abundant harvests gladden the sight, as they spread out in ocean waves over the fields where chemistry has shed its fertilizing dews. And by its magic power, chemistry has released the various medical agents which lie embedded in the innumerable vegetable and mineral products of nature, and handed them over to the healing art, to aid the vital powers in throwing off from the body the many diseases which prey upon man. And its application to the mechanic arts, has bestowed the richest blessings upon man.—Sir H. Davy applied its principles in the construction

of the safety lamp; by which man is enabled to walk with comparative safety in the bottoms of dark mines, with a light, amidst a gas more explosive than gunpowder, where, without this lamp, the miner is frequently exposed to as much danger as though he were walking in a magazine of powder with a lighted torch; and thus thousands of lives and millions of money are saved by this one application of science to art. But the crowning invention of all, the one which constitutes the chief glory of science in its application to art, is the steam-engine. A profound chemical knowledge applied by the most exquisite mechanical skill, enabled James Watt to bring the steam-engine, which had been invented by Savery and Newcomen, to a degree of perfection which renders it the most valuable of all inventions of art. It brings under the control of man, an agent more potent than a hundred giants, swifter than the Arabian horse, and capable of assuming more forms in mechanism, than a Proteus, so as to apply itself to all kinds of work. It can pull a hundred wagons as easily as one—perform one kind of labour as easily as another. It is on the ocean, it is on the rivers, it is on the mountains, it is in the valleys, it is at the bottom of mines, it is in shops, it is every where at work. It propels the ship, it rows the boat, it cuts, it pumps, it hammers, it cards, it spins, it weaves, it washes, it cooks, it prints, and releases man of nearly all bodily toil. This mighty agent is revolutionizing the world—annihilating time and space by its speed, and bringing the most remote parts of the earth together. And all this mighty power is gained by a scientific knowledge of the nature of the atmosphere which we

breathe, and the water which we drink and applying this knowledge to mechanism, so as to make these so familiar objects work for man.

Here let us pause, and reflect upon the benefits conferred on England by the Baconian philosophy.— It has made her the greatest nation in the world.— It has done more to develop her wealth than all the legislation of all the statesmen who have adorned her history by their financial skill. It has given her hundreds of bushels of wheat, thousands of yards of cloths, and bestowed innumerable comforts, where without its instrumentality, there would have been but one. It has enabled her to extend her commerce over the whole earth, and bring into her treasury countless millions of wealth. And this commerce is the source of her great power, both in war and peace, and is the means by which she is controlling the destinies of the world. And though her whole policy is to extend her commerce by cultivating the arts of peace, yet it is true, that she sometimes (and we abhor the wickedness of it) pushes her commerce by the thunders of her cannon into regions where ignorance forbids its entrance; but the people who are thus treated, will in time learn, that it is equally for their benefit, with that of England, that her trade is extended to their shores, and they will feel that peace is the true policy of the world, and that all men are mutually interested in each other's welfare and should live like members of one family. The commercial spirit of England is also the power which pioneers the way for the other great influences which she is exerting upon the civilization of the world. Her sciences, her arts and her literature

are carried on the wings of her commerce over the whole earth. And the Christian religion is soon found smoothing the thorny pillow of the dying man, and pouring the balm of consolation over his drooping spirit, in every clime where British commerce has placed her foot.

But the Baconian philosophy is not confined to physical nature, as has been often asserted. It embraces all knowledge. Bacon expressly says that his method of investigation is intended to be applied to all the sciences. "Some may raise this question (says he) rather than objection, whether we talk of perfecting natural philosophy alone according to our method, or the other sciences also, such as logic, ethics, politics. We certainly intend to comprehend them all. And as common logic, which regulates matters by syllogisms, is applied not only to natural, but also to every other science, so our inductive method likewise comprehends them all." And in his advancement of learning, where he defines the boundaries of the different sciences, he has devoted as much attention to the intellectual and moral sciences as to the physical. But it is nevertheless true, that his labours were directed chiefly towards physical science, because, in this, there was the greater necessity for exertion; as it was principally through ignorance of this part of knowledge, that man was delayed in his career of civilization.— And many, from the fact that Bacon has said so much about physical nature, misconceiving the scope and spirit of his philosophy, have asserted that it is confined to sense, and is utilitarian, in the gross meaning of avarice, and that it necessarily leads to a selfish moral philosophy.

It has happened to Bacon, as to other philosophers, who have originated a new movement of the human mind, that the errors of many of his successors who claimed, and many who did not claim to be his disciples, have been charged to his philosophy, as its legitimate fruits. The doctrines of Hobbs, and Hume, and Hartly, and others in England, and of Condillac, and Helvetius and D'Holbach and the host of infidels and atheists in France, have been again and again proclaimed as the legitimate and necessary deductions from the principles of the Baconian philosophy. The doctrines of the philosophers just mentioned, resulted from these philosophers seizing upon some one only of the great principles of the Baconian philosophy, and carrying it out to the wildest extremes, without modifying it by the other principles of the system, and are, therefore, at most, nothing more than the errors which necessarily result in the development of the Baconian philosophy, and are not a part of that philosophy, but merely the exuviae thrown off from it as it passes through the process of development. Cicero, in his *De Oratore*, has remarked the very same thing of Socrates which we are now remarking of Bacon. "For, as they all," says he, "arose from Socrates, whose discourses were so various, different, and universally diffused, that each learned somewhat that was different from the other; hence families, as it were, of philosophers were propagated, widely differing among themselves and vastly unconnected with, and unlike one another; yet all of them affected to be called, and thought themselves the disciples of Socrates. For, in the first place, Aristotle and Xenocrates were the immediate scholars

of Plato; the one of which was the founder of the Peripatetics, the other of the Academics: Then from Antisthenes, who admired chiefly the patience and abstemiousness of Socrates in his discourses, arose first the Cynics and then the Stoics. Next from Aristippus, who was charmed with the sensual part of Socrates' discourses, the sect of the Cyrenians flowed, whose doctrines, he and his successors maintained without any disguise of sentiment. There were also other sects of philosophers, who generally professed themselves to be the followers of Socrates." We see then, that all the different sects of philosophers, who succeeded Socrates, the morose and abstemious Stoic, and the gay and voluptuous Cyrenian, all claimed to be the true disciples of Socrates, and that Cicero says that their errors resulted from their seizing upon one principle only of the philosophy of Socrates, and losing sight of the other principles. The Stoics seized upon patience and abstemiousness, and the Cyrenians upon sensual enjoyments, both of which, when modified by the other, are correct principles, but when carried to extremes, each is wrong, and will lead to false moral philosophy. Having thus indicated the source of the error which we are combating, we will now show that it is an error.

The position that the Baconian philosophy leads to a selfish morality, is maintained by many on the ground that the Baconian philosophy admits but one source of ideas, viz: sensation. The argument is, that within the sphere of sensation, there is no idea of right and wrong—that pleasure and pain are the only ideas furnished by sensation to denote the moral qualities of human actions, and that we approve of some acts, be-

cause they give pleasure, and disapprove of others, because they give pain; and that, therefore, according to this theory of the mind, utility is virtue, and self-interest the ground of moral obligation. But we shall show in the 2nd chap. of the second part of this discourse that the Baconian philosophy admits two sources of ideas, viz: sensation and consciousness; and therefore this argument falls to the ground; because the ideas of right and wrong are developed in consciousness, and it is in consciousness, that the Baconian philosophy lays the foundations of morality, and not in sensation.

According to the Baconian philosophy, we must examine all the facts of man's moral constitution, and establish the fundamental truths of moral philosophy by psychological observation. Rejecting all innate moral principles or notions, it appeals to experience, to both the light of nature and revelation. It therefore leaves man perfectly free to examine all the facts of his moral constitution, and to establish whatever system of morals, a sound induction may warrant, whether the selfish or the disinterested system. When then, we look into the heart of man, we there find certain instinctive affections, such as love, hope, fear, anger, pity and many others which are all certainly disinterested in their nature; as they seek their respective objects, by natural impulse or sympathy, without the mind's thinking of anything beyond, whether their satisfaction or disappointment will be agreeable or disagreeable. We also find in the mind, the power to distinguish moral good and evil. It is upon these attributes of our spiritual nature, that the Baconian philosophy founds morality. But let us inquire into these

facts further, and ascertain the relation in which the affections stand, to the power in the mind to distinguish good and evil, or in other words ascertain the connection between the feelings and the intellect. If a beautiful object be presented to the mind either through sense, memory or imagination, and occupies its attention exclusively, the emotion of love, is by a great psychological law, necessarily excited in the mind, and will continue until the object is removed or forgotten, or some other object is presented in its stead. For it is a law of our mental constitution, that every emotion whether of love or hatred is allied to some object of perception or memory or imagination, and is dependent upon it, as its antecedent or cause, and the emotion never can be excited in the mind except by its appropriate object being in the view of the mind, and never can cease to exist in the mind until the object is forgotten or removed from its view. Just as the mind sees, so the heart feels. It is thus manifest that considerations of self have no agency in producing our emotions whether of love or resentment, in the natural operations of the mind, and consequently the great law of the affections on which morality is based, is disinterested, operates uninfluenced by considerations of self. But this connection between the perceptions and the affections shows that the correctness of our moral philosophy will depend upon the enlightenment of our intellect and the purity of our affections. That goodness is goodness is hard to be perceived by the greatest minds, if the moral feelings are corrupt. This is a truth written in blood upon the pages of history. But whenever the mind perceives goodness or moral beau-

ty, the heart is necessitated by the great law of the affections just indicated, to feel the emotion proper to it, of love, and when it sees vice or moral ugliness, to feel the emotion proper to it, of aversion, and this without any considerations of self mingling in it. We see then by this analytical induction, that the principle of morality is disinterested; because the Creator by the great law of the affections has made it imperative on us to love virtue for its own nature, and to hate vice for its own nature, having made it natural for the mind to love virtue and hate vice by creating the relations of love and hatred between them. But as man is not under a law of necessity like mere brute matter and incapable of change, the obliquity of his mind may become such as to render him unable to see the loveliness of virtue, which is the same as not seeing virtue at all, for loveliness is its very essence, just as the eye may be so diseased as in jaundice, as to render him unable to see the real colours of objects, and the sinfulness of his own heart will cast its hue over virtue, just as the jaundice of the eye will cast its hue over the objects of vision, and neither the loveliness of the one nor the colours of the other can be perceived.—The truth is, the perception and the emotion constitute the state the mind is in, when any object is present in thought, and they cannot be separated. They are not distinct acts of the mind, but are the elements which make up the act of apprehension or spiritual discernment. And it was from the fact, that Helvetius did not discern the truth, that perception and emotion are both elements of spiritual discernment, and dwelt too exclusively upon the phenomena of emotion, that

he fell into the error that all mental acts are nothing but feeling—that to think and to judge are but to feel; and that Diderot in criticising this obvious error of Helvetius, fell into the opposite one, and maintained in his essay on the origin and nature of the beautiful, that the perception of beauty by the mind is a matter of reason alone, like the perception of the truth that two and two make four. We see then, that according to the psychological facts which the Baconian philosophy points out as the foundation of morality, that its principle is disinterested. Man does certainly feel the moral rightness of truth and justice, without any view at the time to their consequences, just as he feels an appetite for food without any view to its utility upon the animal economy—the one feeling terminates in virtue for its own sake and the other on food for its own sake. But God in his great benevolence has so organized the system of things, as to make that which is right, useful in such a vast majority of instances, as to induce us in cases where it is doubtful what is right, to use the relative utilities of the acts as the standard of their rightness, and it has indeed induced some to maintain that utility is the essence of right.

But some contend that the Baconian philosophy leads to a selfish morality, in a different mode from that which we have just examined. That it tends to corrupt the moral feelings by infusing into them, the spirit of selfishness, in directing so much inquiry into the developement of the resources of physical nature; and thus making man to think continually about his physical comforts, and to place too much value upon the riches of this world. That the Baconian philosophy

has done more than all other philosophies put together, to develop the resources of physical nature, and thereby to multiply the physical comforts of man, we have already shown; and so far from shunning this result, or wishing to conceal it, it has been the main purpose of this part of our discourse, to exhibit the fact in all its amplitude, and to proclaim it as the chief glory of the philosophy which we expound. If such a result makes man selfish, then is the destitution of barbarism, better fitted to produce a sound morality than the wealth of civilization. Then is man, clothed in skins, possessed of more generous sympathies, than when clothed in the comfortable fabrics of cultivated art; and his heart contracts to a narrower selfishness, when he accumulates wealth by millions, than when he saves it by mites. If these be true propositions, then, have we entirely misread human history. The fallacy of these conclusions, shows the falsity of the premises from which they are deduced. And it is evident, that the whole tendency of the Baconian philosophy is to elevate the condition of man. It enables him to supply his physical wants by a small portion of labour, and to devote his consequent leisure to the cultivation of science and art. And it dignifies and ennobles the employments which are devoted to the promotion of our physical comforts, by connecting them with the sciences. Under its influence, mechanics are no longer mere handicraftsmen, but are men of science, possessed of enlarged views of human advancement.— Watt and Fulton occupy the highest places amongst the benefactors of mankind; and are quite as fit to join that divine assembly of spirits, where Cicero,

in his *De Senectute*, rejoices that he shall meet Cato, as either of those sages of antiquity.

But let us throw aside all speculation, and look to facts. Where is the nation that can boast a literature pervaded by a loftier morality than England? It is true that some of her writers maintain the selfish system of morals, and some the disinterested. But this has been the case at every era of philosophical development, in every nation of the civilized world. In morals, as in every thing else, men often bewilder themselves in the minuteness of analysis. Those who maintain the system of disinterested morals differ as to the basis of morals. One class referring our moral ideas to a special faculty, termed the moral sense, others to reason, and others to both the reason and the sensibility. And those who maintain the selfish system differ widely, also as to the basis of their principle. This is inseparable from the nature of the subject, for it is not purely a philosophical subject: but derives more of its light from revelation than from nature; and therefore, in attempting to ascertain the philosophical foundation of moral obligation, we shall often find our line too short to reach the bottom. The difficulties are inherent in the subject; and they have been more nearly overcome by the English than any other people. And not only is the literature which has grown up under the influence of the Baconian philosophy pervaded by a lofty morality, but the people who have drunk most copiously at its fountains, and whose mental habits and moral principles have been formed under its influence, are distinguished by their disinterested benevolence. They dispense milli-

ons annually in charities at home; and their benevolent societies are healing the sick, clothing the naked, and feeding the hungry, and instructing the ignorant in every clime of the earth.

In examining this question, we must distinguish the commercial spirit of England, from her spirit of philanthropy. While the first toils by day and by night to accumulate wealth, the latter toils by day and by night to expend it in alleviating the sufferings of the afflicted of all nations, and kindreds, and tongues.—How superficial and ignorant then, is the opinion so often expressed, that the Baconian philosophy leads to a selfish morality! We have shown the contrary, both by philosophical analysis and historical fact, which are the only two modes of proof of which any subject is susceptible.

The same class of thinkers who maintain that the Baconian philosophy is purely sensual, a mere pander to our animal comforts, maintain also, that it has no ideal, but is utterly inconsistent with all the arts of beauty. That its main object is to make money plenty in men's pockets; and that the spirit and style of its kindred poetry is exemplified in the following couplet:

"A penny sav'd is two-pence clear,
A pin a day 's a groat a year."

Let us examine the truth of this charge. The Baconian philosophy, as we shall show in the second chapter of the second part of this discourse, recognises consciousness as fully as it does sensation, as a source of ideas, and consequently just as fully embraces within its scope, the world of mind with all its subjective realities, as it does the world of matter with

all its objective realities. It takes therefore in its view, all the phenomena of the spiritual world, as well as of the material, and all the adaptations between these different worlds, from which the true theory of the sublime and beautiful id art, can be educed. And it teaches a grander and a nobler, because a truer style of literature, than any philosophy which has been the source of culture to any people known to history. It takes nature for its model—the archetype which God has made,—and repudiates all that is speculative in taste, as it does all that is speculative in reasoning.—And the true theory of taste, is to imitate nature, not it is true, by a servile copy, but by exalting her—by making her beauty more beautiful, and her sublimity, more sublime—but still by letting the beauty and sublimity, be the beauty and sublimity of nature, merely exalted. For the human heart was formed to suit the natural, and the natural was formed to suit the human heart, to call forth all its powers. Some things, by a great pathological law are agreeable to the human heart, and others, disagreeable. Some things naturally excite the feelings of sublimity, and others, the feelings of beauty. These things are formed respectively by the Creator for the very purpose. It is an adaptation of the external world, to the spiritual constitution of man. The province then, of the science of taste, is to ascertain, what those things are, and the distinguishing property which constitutes them, in both the material and spiritual worlds, which naturally, and of their own original adaptation, excite the emotion of the beautiful or the sublime, or any other emotion, which it is the object of art to call forth. For some

things will excite these emotions by association, and not of their own nature; and consequently are not so well calculated to produce these emotions, as the things from which they have derived this power by association; and in fact cannot excite these emotions at all, in minds in which, they have not been associated, with the things from which they have derived this adventitious power.' Truth or conformity to nature, then, is the great standard of taste. For there is a true in taste, a true in morals, as well as a true in matter; and all of them are to be ascertained by inductive observation, and not by speculative conjecture. Surely then, the literature which springs up as an offshoot of that philosophy which directs all our observations to nature, and admits no criterions whether in science or art, but the natural, is most likely to approach nearest to nature in its representations of the sublime and the beautiful and all that affects the human heart. And did the speculations of the philosophers of ancient times and of the middle ages ever present such sublime and such beautiful visions before the fancy, as the Baconian philosophy has spread out in the vast perspective of modern discoveries? The truth is, the views of nature as presented in these discoveries have a grace and a grandeur, a beauty and a sublimity far above all the visions of fancy that ever lay in the enchanting walks of speculation or poetry. Induction has in fact evolved higher standards of sublimity and beauty, than the imagination ever bodied forth in its most rapturous visions of the ideal. How then, can the Baconian philosophy lead to a mean literature, when it familiarises the mind to the most sublime and

beautiful objects of contemplation? It must have the opposite effect. It must give a loftier ideal to the orator and the poet than the mere speculative philosophies ever furnished. And no writer has presented a more exalted estimate of poetry, and delineated its high behests with more accuracy than Bacon himself. "The use of poesy (says he in the advancement of learning) hath been to give some shadow of satisfaction to the mind of man in those points wherein the nature of things doth deny it, the world being in proportion inferior to the soul; by reason whereof there is agreeable to the spirit of man a more ample greatness, a more exact goodness, and a more absolute variety than can be found in the nature of things. Therefore, because the acts or events of true history have not that magnitude which satisfieth the mind of man, poesy feigneth acts and events greater and more heroical: because true history propoundeth the successes and issues of actions not so agreeable to the merits of virtue and vice, therefore poesy feigns them more just in retribution, and more according to revealed providence: because true history representeth actions and events more ordinary and less interchanged, therefore poesy endueth them with more rareness and more unexpected and alternative variations: so as it appeareth that poesy serveth and conferreth to magnanimity, morality and delectation. And therefore it was ever thought to have some participation of divineness, because it doth raise and erect the mind by submitting the shows of things to the desires of the mind; whereas reason doth buckle and bow the mind unto the nature of things." This admirable delineation of the objects and nature

of poetry, sounds doubtless, in the ears of those whose opinions we are examining, more like the language of Homer or Dante or Milton discanting on their divine art, than like the language of the father of the experimental philosophy. The truth is, the mighty and various and finely-fashioned mind of Bacon is as little understood by this class of thinkers as the spirit and scope of his philosophy. His mind was a mirror held up to nature, which reflected it, in all its vastness and all its minuteness, all its sublimity and all its beauty: revealing as much from the spiritual world as from the material—from the dark abysses of the human heart, as from the hidden depths of matter.

The chief ground, on which, the opinion that the Baconian philosophy leads to a mean literature, appears to rest, as far as any thing definite can be gathered from the loose and vague generality of the language in which it is usually expressed, is that this philosophy directs the mind so exclusively to considerations of utility, that it renders it incapable of appreciating the beautiful. This is a singularly erroneous view of the matter. For it is not immediate considerations of utility which prompts the Baconian philosopher to his inquiries. But it is the love of truth—the delight of viewing new truths evolved in ever varying forms of beauty from the multifarious facts which beset the path of investigation—the felt triumph of the march over the difficulties of science, as the enquirer steps from altitude to altitude on the before untrodden steeps of investigation, until he reaches a summit, from whence he can descry the goodly classifications and the harmonies of principle evolving themselves from

the chaos of facts which lie spread out in such boundless profusion over the vast regions of the universe. These are the considerations which prompt the Baconian philosopher to his inquiries. And after he has discovered some new principle, then it is, that in accordance with the spirit of his philosophy, he enters upon considerations of utility in its applications to the relief of human wants. The Baconian philosophy, though considerations of utility embrace so much of its aim, and constitute so much of its glory, does not reject the beautiful, but embraces both it and the useful in perfect harmony, within the universality of its doctrines. And though the physical sciences to which this philosophy has directed so much attention, are emphatically the sciences of utility, still their study, as the opinion which we are examining presupposes, does not necessarily lead the mind off from the study of the beautiful, or blunt its relish for objects of taste. The relation between the different branches of knowledge is much more intimate than this supposition assumes. Such is this intimacy, that the physical science, which of all others, appears to the superficial observer, to be the most remote from any affinity to the arts of beauty, has been applied to two of these arts with the most felicitous success. Sir Charles Bell has applied his discoveries in the nervous system to the arts of painting and sculpture. Having discovered that, besides the two great systems of nerves of sensation and motion, other nerves went to the muscles and moved them, and that these arose from a tract of the spine separate from either of the two columns originating the other nerves, and that they went chief-

ly to those muscles which subserve the purposes of respiration; and that as the function of respiration in man was not designed for the sole purpose of vitalising the blood in the lungs, but also, for communicating the thoughts and passions of his soul, he had the genius to perceive, that the nerves regulating respiration, must be the nerves of expression and emotion. He therefore under the impulse of a most exalted genius for the arts of beauty, developed this grand idea, and wrote his celebrated work, the "Philosophy of Expression," and in this way applied his discoveries of the nerves of respiration to teaching the painter and the sculptor, a knowledge by which he may imitate and understand and correctly depict the evervarying play of human passion. And thus a man who spent his life in dissecting the bodies of his fellow men and of the inferior animals, could pass out of this butcherly employment, as those whose opinions we are examining would esteem it, and teach us how to breathe life and feeling into the canvass and the marble. And Bell himself was one of the finest painters of his day—was no less skilful with the pencil of the painter, than with the knife of the Surgeon. Though, after the battle of Waterloo, he went to the scene of slaughter and spent days and nights amidst the dead and dying, sleeping only one hour and a half out of the twenty four, for the purpose of perfecting himself in military surgery, yet at a later period of his life, we find him making a pilgrimage to Rome, to view in that imperial city the noble remains of ancient art, to enable him to put the finishing touch upon his "Philosophy of Expression." See then! how extraordinary and mysterious, is the

connection between utility and beauty, between the anatomy of the nervous system and the arts of painting and sculpture. The same discoveries are applied to the arts of utility and the arts of beauty, to medicine and to painting and sculpture.

But let us illustrate this point a little further.—Geometricians have discovered what is the curve of the greatest resistance or solidity, and have thus established a fact of the greatest utility in architecture.—Michael Angelo in forming the model of the dome of St. Peter's at Rome, gave it that oval or curve which appeared to his judgement as an artist, to be the most beautiful as drawn on the given breadth and height. And such is the exquisite beauty of the dome that it fills every beholder with admiration. It is said, that a distinguished geometrician M. de la Hire being at Rome, was so struck by the elegance of this structure, that he determined to inquire into the rationale of its impression on the mind; and on examining the geometrical properties of the curve of its outline, he found that it was that of the greatest resistance or solidity.—And thus it is ascertained, that in this instance, what is the most solid or useful in art is also the most beautiful. And what an extraordinary proof does it furnish of the sublimity of the genius of Michael Angelo for the beautiful in art, that in his attempts to sketch the oval outline of the greatest beauty for the dome, he should by the mere exercise of his judgement as an artist, have hit upon the exact curve with mathematical precision. For the identity of the curve of the greatest beauty with that of the greatest utility could never have been ascertained, except by some sublime

genius in the felicity of his judgment, ascertaining the first, as it were, by an inspired intuition, and then the geometrician by the unerring calculus of his science, discovering that what the artist has thus conceived to be the most beautiful oval outline, is the exact mathematical curve of the greatest resistance. And this, upon the doctrine of probabilities, amounts almost to a demonstration, that the curves of utility and beauty are the same.

But the fact, that utility and beauty are of a very kindred nature, or rather, that the first is often an important ingredient of the last, does not need further illustration. For so frequently are they found conjoined both in art and nature, that some philosophers, though very erroneously, have been led to insist, that utility is the essence of beauty—that beauty consists in the fitness of things or the adaptation of parts; just as some philosophers have been led by a like partial view, to insist that utility is the essence of moral good, from the frequency of the union of the expedient and the right in the moral economy of the world.

We can now, from the altitude to which our analysis has carried us take a wide survey of the topic which we are discussing, and see by the light of science, how ignorant and groveling is that view of the Baconian philosophy, which sees in its vast range nothing but a sordid utility, while, that utility which is consistent with all that is noble in morality and sublime and beautiful in art, is the doctrine which it teaches, from the first aphorism in the *Novum Organon*, to the end of its last lesson.

But it is useless to dwell longer upon philosophical

analysis, when we have historical proof that the Baconian philosophy is consistent with the arts of beauty, in the noble productions of English literature; for the literature of every nation partakes of the nature of its philosophy, as the very charge which we are considering assumes. Where then is there a nobler literature, than that which has been cultivated in the same soil and by the same people, with the Baconian philosophy? Shakspeare, who was the cotemporary and friend of Bacon, and whose productions are so signally marked with the common sense which, arising in the Baconian philosophy, pervades the whole of English civilization, stands at the head of the dramatic writers of the world. As though he had borrowed the magic wand of nature herself, he creates all beings with the same ease that she does, and fixes them in their appropriate employments, and plans and executes their different offices, with an exactitude which shows that every act proceeds from its natural motive, and every destiny from a plan of coincidents in exact conformity to the dispensations of Providence. The most dreadful passions are managed with as easy a conformity to nature, as the most gentle. Murder, with its ferocity and its relenting, its determination and its hesitancy, before it reddens its hands in blood, and its remorse, and its imaginative agony, after it has done the dark deed, is dramatized with as much perfection as if the poet had seen with his eye the naked heart of the murderer throbbing in guilt: And with equal ease, true love is presented in all its artlessness, whispering its affection in words as soft and simple and sweet, as the attic bee ever distilled upon the lips of a Grecian

shepherdess; or else, sitting silent, under the restraining diffidence of a pure heart, "until concealment, like a worm in the bud, feeds upon her damask cheek."— And jealousy, that monster of suspicion, to whom, "trifles light as air, are confirmation strong as proofs of holy writ," is presented in all his odiousness. And avarice standing by his bond, and humour holding both his sides, and every human passion are presented in ideal perfection. The dark, and awful, and mysterious abyss of the human heart is completely fathomed and the poet sees by the light of Christianity, how, fearfully and wonderfully it is made, and paints it, as with a pencil dipped in inspiration. And though Greece had her Homer, England has her Milton; and never since the angels' harps, which hailed the morn of the creation, has a nobler been strung than his.— The angels sang the joys of life, Milton the woes of death. And did a deeper melody, and fuller of the dirgelike sounds of woe, ever flow from the versification of poetry? Was the great epic of eternal death in all its horrors, ever before made a reality to the living? Catching the sublime pathos of the old poets of Judea, and the fire and finish and copiousness of Greece, and transforming and subordinating all to the type of his own mighty genius, he has made a poem worthy of the great theme of the fall of man. The contrast between paradisaical innocence and happiness and infernal wickedness and misery is presented in terrific reality. Such is the grace and beauty and loveliness of the first woman as she appears to the creative fancy of the poet, that he represents Satan, though with a bosom filled with the malice of hell,

and intent upon the destruction of man, merely because man was innocent and happy, as captivated for a moment by her charms as he beheld her alone, amidst the rich shrubbery of Eden, enchanting the scene of bliss she moved in. But this exquisite sympathy of the poet for true loveliness, does not, for one moment, lead his judgement astray, so as to make him soften the character of Satan. For the unconquerable malignity and insatiable hate of the arch fiend, is depicted in all its dreadful deformity; and the horrors of hell are seen amidst the "darkness visible," in such horrifying import as to show that "there, hope never comes, that comes to all." The poet is always master of himself; is never overpowered by the sublimity, nor enchained by the beauty of his conceptions: but with the self-possession of a great artist, he sets forth every thing in its proper position, and in its proper character, and in language so expressive and so suited to every topic, as to place him perhaps at the very head of the great masters of diction. And Butler, in his *Hudibras*, has given to the world, the great epic of ridicule. With a fancy alive to the ludicrous, he has caught its minutest shades in every action of life, and presented them in an epic poem; and thereby the majestic epic becomes ludicrous. The conceptions of the poem are ludicrous, the language is ludicrous, and even the very rhymes. The poet, it is true, shoots keen shafts at his fellow-men, but they are dipped in the unction of good-nature, and not in the venom of malice. Such a poem furnishes entertainment to one of the most important faculties of the human soul, the sense of the ludicrous—which ministers so much to the smiles of home, the

gaities of companionship, and by its goodly influences so often sweetens the sourness of our feelings amidst the annoyances and the ills of life, and opens the heart to the frailties of human kind, and makes us sympathise with the whole race, rich and poor, learned and ignorant, as we see their extravagancies through the amiable medium of a laughing heart—and is therefore worthy a place amongst the great works of art. And Robert Burns, with his harp, whose golden touch sent forth tones so soft, and sad and tender, is heard amidst the choir of English poetry, reviving by his natural strains, the youthful freshness of human feeling, and keeping in harmony, those delicately tuned chords of the heart, which in the trials of life are so apt to lose the sweetness of their primitive melody. But, we will not particularise further; for the English muse has sung of every theme in original strains; and has also proved the beauty, and strength, and copiousness and flexibility of the English language by translating into it the masterpieces of antiquity, and showed that the streams are almost as pure in these channels, as in their Grecian and Roman fountains. The prose literature of England also, is rich in its abundance of matter and excellence of style and the wide range of its topics. Her historians are superior to any of modern times, and perhaps equal to those of ancient. Her orators, as suited to the sphere of modern civilization, are equal to any in any period of human history. In profound views of human nature, in far insight into the policy of legislation, and in all the knowledge of statesmanship, English oratory is far before that of antiquity.—And in the mere art, English oratory is not easily

surpassed. In the choice of those topics, both local and general, which lead the intellect and the heart captive; and in the easy and shining fluency of narrative, the sparkling ripples of wit, the bold, and headlong and dashing cataracts of declamation, and the full and swelling, and sweeping and overwhelming tide of argument, and the lightning's flash of suddenly provoked invective which illuminates the whole flood of speech, and falls mercilessly upon its victim, it may well compare with that of any nation ancient or modern. In criticism also, whether exegetical or purely rhetorical, English literature is highly distinguished. And as a specimen of historical criticism; there is nothing so ingenious, so original, so masterly, so triumphant and so to be marvelled at, as Paley's "*Horæ Paulinae*." It is a wonder of ingenuity—a miracle of logical acumen. Facts in the epistles of Paul, which separately send forth a mere glimmer of light, and which are apparently so unconnected as never to be at all associated in thought, by even careful readers, are selected and brought together in logical order, and the feeble lights of each are so concentrated upon the fact sought after, and the fact is so illuminated in every point, that you can no more doubt of its truth, than you can of the reality of day, when the sun ascends the meridian. In prose fiction too, what literature can compare with the English? Where else, can so unique a group of such masterly productions of their kind be found, as the *Pilgrim's Progress* of Bunyan, the *Robinson Crusoe* of De Foe, the *Gulliver's Travels* of Swift, and the *Tristram Shandy* of Sterne? And how many thousands of all cultivated nations, have been

charmed by the magic writings of Walter Scott! The young and the old, the learned and the ignorant, the wicked and the pious, have all been carried along on the enchanting tide of his narrative as it flowed from its exhaustless fountain, through the ever-varying scenes of an epitomized world, and all have been equally delighted with the wonderful exhibition. Such then, is the literature, laden with so many masculine beauties, which has been cultivated in the same soil and by the same people, with the Baconian philosophy. How erroneous then is the opinion, that the Baconian philosophy has no ideal, but is confined to sense, and leads to a mean literature.

While answering the charge just considered, we have admitted that the literature of every nation or epoch partakes of the nature of the philosophy of that nation or epoch; because it is a well-established historical fact, and is in truth, nothing more than the exhibition, by a people, of the same bent of mind in literature and philosophy. The common sense of the Baconian philosophy is manifested throughout every department of English literature. The characters in Shakspeare's plays are not mere personified qualities like the persons in an allegory: but are real men and women, such as we meet with in the world, actuated by the same diversity of motives and seeking the same objects. The particular passion sought to be delineated is individualised in some person, and the excellence of the delineation consists in the harmony between the passion though exhibited in all its ideal exaltation, and the character in which it is set forth. For example, murder, and avarice, and jealousy and humor are not

exhibited each in some metaphysical creature, which has no other passion than the one exemplified, but in real characters, which can sympathise with the circumstances of real life, and are at times under the influence of all the other passions of man, as their various situations call them forth. Murder is exhibited in Macbeth, avarice in Shylock, jealousy in Othello and humour in Falstaff, who are all men full of the common sympathies of humanity. This is the greatest triumph of the dramatic art, to invest the ideal with humanity. It is true that Shakspeare also created such characters as Calaban; but this was merely a wayward freak of his genius. And the same characteristic is exhibited in the writings of Milton. His fiends and angels are not metaphysical abstractions; but are men exalted into superhuman greatness. Though Satan does not appear "less than archangel ruined," still he appears like a wicked man of superhuman powers. And the angels appear such as we may imagine good men may become in a world where all their powers are exalted. This likening of spirits to men, we are well aware has been censured by some critics as a great impropriety, and the Mephistophiles of Goethe, which is a metaphysical incarnation of sin, has been reckoned a finer delineation of the spirit of wickedness than the Satan of Milton. But this criticism, we apprehend, is founded in a misconception of the nature of the poetic art, whose province it is to seize upon practical criterions, and not upon speculative—to deal with realities, and such things as can be made so much like realities, as to awaken the common sympathies of the human heart, and not with metaphysical abstractions—to be like

Shakspeare, and not like Goethe, like Robert Burns, and not like Coleridge. But be this as it may, Milton has certainly taken a common sense view, and not a metaphysical one, of his great theme, and thereby showed the national trait of his mind. And Butler has taken a common sense view of human nature in his great poem. Hudibras, with all his ludicrous fanaticism and solemn folly, is still a man; and so of every other character. And as to the poetry of Burns, it expresses more of natural feeling, such feeling as all men have, than that of any poet known to history; and we cannot but consider it a favourable omen of sound taste, that his poems have lately been translated into German, though we must confess that his simple muse must cut rather an awkward figure in the coarse fabric of German diction. But it is useless to dwell upon this topic; for all the late writers upon the history of literature on the continent of Europe, have made special reference to the fact that English literature is pervaded by a vein of common sense. The English have even examined the evidences of Christianity according to the principles of the inductive method, or of common sense. Butler in his analogy, has drawn conclusions as to the truth of Christianity from the analogy which exists between it and the course of Providence as exhibited in nature; which is as strictly an inductive process, as any used in the investigation of natural philosophy.

But there is a still graver charge brought against the Baconian philosophy. It is said to lead to materialism and atheism. DeMaistre, in his commentary on the philosophy of Bacon, says: "Every line of Bacon

conducts to materialism: but in no part has he shown himself a more skilful sophist, a more refined, profound and dangerous hypocrite, that in what he has written on the soul." And Schlegel, in his history of literature, says: "The philosophy of sensation which was unconsciously bequeathed to the world by Bacon, and reduced to the shape of a regular system by Locke, first displayed in France, the true immorality and destructiveness of which it is the parent, and assumed the appearance of a perfect sect of atheism." In the second chapter of the second part of this discourse, it will be shown, that the Baconian philosophy recognises the testimony of consciousness, as fully as it does that of sensation. If this be so, how can that philosophy lead to materialism? Consciousness tells us that the soul is not material; for we are certainly conscious that its attributes are not those of matter. Sensation informs us of the material world, consciousness informs us of the spiritual world, and we have no right, according to any rule of evidence or logic, to predicate in the way of philosophical affirmation, any idea derived from the material world, of the objects of the spiritual world; because the ideas of the qualities or attributes of spirit, we get from consciousness, and we cannot predicate of spirit, any quality but what is ascertained by consciousness; and neither can we predicate of matter, any quality but what is ascertained by sensation. We have no evidence therefore, that the soul is material; because the knowledge of its nature is derived from a source, from which not one idea relative to matter is derived. The Baconian philosophy, therefore, admits the same amount of evidence in favour of

the immateriality of the soul, that the most transcendental philosophy does; and therefore rests upon the same foundation in this particular.

And so far from the Baconian philosophy being atheistical, Bacon has defined the boundaries, and pointed out the nature of the evidence upon which natural theology rests upon the principles of his philosophy, with admirable precision, as will be shown in the third part of this discourse. And no nation has cultivated natural theology with such assiduity and success, as the English. The more the Baconian philosophy has been cultivated, the more has natural theology advanced. It is in fact the boast of this philosophy, that it has revived the study of natural theology, after it had been abandoned and scouted by the philosophers of the continent of Europe, as an unprofitable study. "It gave a particular pleasure to Sir Isaac Newton," (says Maclaurin in his account of the writings of Newton,) "to see that his philosophy had contributed to promote an attention to final causes, as I have heard him observe, after Des Cartes and others had endeavoured to banish them." And where is the great work of Paley? the two first chapters of which approach as near to the certainty of mathematical demonstration, as it is possible for moral reasoning to do. The evidences of natural theology pass through the achromatic mind of the author, without being discoloured by prejudice or passion, and paint upon his pages, their doctrines with all the life and precision of daguerreotype. And yet there never was a mind more thoroughly imbued by the philosophy of sensation, as Schlegel calls it, than Paley's. And the Bridgewater

treatises have brought all the discoveries of the Baconian philosophy to prove and illustrate natural theology. And Bishop Butler even in his day, considered natural theology as so well established in English philosophy, that he assumed its truth as the foundation of his great work on the analogy between natural and revealed religion. So we see that in English philosophy, revelation, natural theology and physical science, are united in perfect harmony, proclaiming with one voice that there is a God.

Such then is the character of the Baconian or English philosophy: it embraces every thing that is sublime in speculation, useful in practice, lofty in morality, beautiful in art, and reverential in religion.

We now feel ourselves free to declare, that Bacon has done more to advance the progress of the human mind than any uninspired man known to history.—There are no writings in the whole of literature, which take so profound a view of human nature, and point out so exalted a destiny for man, as his. With a philosophical forecast unparalleled in the world, he has given anticipations of some of the greatest discoveries of modern science. Even the law of gravity is conjectured, and its application to the explication of the tides of the ocean is distinctly stated. And his philosophy possesses within itself the principle of perpetual progress; for, it is not like the ancient philosophies, confined to speculative principles, from which an explanation of all things is to be deduced, and as these principles are in time found to be incapable of explaining the phenomena of nature, the ancient philosophies all sink into skepticism and become extinct,

but it is commensurate with the phenomena of the universe, as it deals with phenomena, and deduces its principles from them, and not them from its principles.— It is therefore, not like the ancient philosophies, a means of culture and progress for one people or epoch only, exhausting itself upon that people or epoch, but it is the means of culture and progress for all the nations and periods of the world. The nations which have been most under its influence have risen superior to all the rest of the human family, and have advanced progressively, and their speed is daily accelerated, to a degree of intellectual development, moral superiority, and political power, which seem to indicate that it is destined to form the type of the civilization of a greater part, if not of all the human race. And that this progress is likely to be perpetual, is also indicated by the fact, that England, the nation which has most assiduously cultivated this philosophy stands at the head of modern civilization, and is not only the great progressive and regenerative nation of modern times, but is also eminently conservative, possessing in happy combination the elements of both progress and stability. She never loses sight of ancient landmarks in her progressive movements. How often, for example, has she thrown her conservative influence over the troubled waters of European politics, even when the commotion received its first impulse from the influence of her own principles of government! Scarcely has a quarter of a century elapsed, since she exerted all her power to rescue Christendom from political and moral ruin, brought about by a revolution with which at first she sympathized strongly. And it seems, at this distance

of time from the event, that if it had not been for her, all Europe would have retrograded in civilization.— During the awful storm of the French revolution, when almost every government of Europe lay a wreck upon the tremendous tossings of the political waters, a gleam of hope still broke across the scene, as the wise men of the earth turned towards England and saw, that freighted with the best interests of humanity, secure in her strength, she was riding out the storm.

We have, therefore, strong reason to hope, that the Baconian philosophy sanctified by the spirit of Christianity, will pour its sanative floods over all the earth, and bring back all nations from the delirious wanderings of the transcendental philosophy, to walk in the plain and sober paths of common sense.

PART THE SECOND.

CHAPTER 1st.

THE BACONIAN METHOD OF INVESTIGATION.

The object of this chapter is to exhibit the method of investigation taught by Bacon in the *Novum Organon*. As the best mode of doing this, we will first sketch an outline of the logic taught by Aristotle in his *Organon*, and show its nature and its province, and then sketch an outline of the method of investigation taught by Bacon in his *Novum Organon*, and show its nature and its province, and compare the two, and point out their differences. Let us then commence with an analysis of the reasoning process, as it is of this, that the *Organon* of Aristotle treats.

We frequently observe in the best writers upon science, a vagueness and contradiction of expression in regard to the reasoning process, that evince the greatest looseness of opinion in regard to its nature.— We frequently meet with such expressions as “the inductive process of reasoning,” “the true method of reasoning, which Bacon taught,” “the erroneous method of syllogistic reasoning which Aristotle invented,” and many other such expressions, which clearly indicate that the writers suppose, that there is more than one mode of reasoning. Nothing can be more erroneous

than such a supposition. No matter what be the subject upon which the mind is employed, whether in the spiritual or material world—whether in metaphysics, ethics, politics, mathematics, or in the different branches of natural philosophy, the reasoning process is always the same. The process is always from the known, or that which is assumed as known, to the unknown; and is always reducible to a syllogism. The syllogism is in fact the process of reasoning; for though every argument does not pass through the mind in the strict logical form of the syllogism, yet in every instance of reasoning, all the parts of a syllogism are contemplated by the mind. Some seem to entertain the notion, that the syllogism is a peculiar kind of reasoning—that it is not the natural process of the mind in reasoning, but is an artificial mode invented by Aristotle. Let us test this notion, by analysing an argument presented in its common form. “The world exhibits marks of design, it therefore has an intelligent author.” Now the process which takes place in the mind, in forming this argument, is the syllogism; as will be seen, if we attempt to refute the argument. Suppose we deny the truth of the argument, we must do it upon one of two grounds. Either upon the ground, that the world does not exhibit marks of design, or upon the ground, that even if it does, still it may not have an intelligent author. An objection upon either of these grounds is a full denial of the argument. What does this prove? Why, that the argument rests upon two assumptions. First, upon the assumption, that whatever exhibits marks of design has an intelligent author; and, secondly, that the world exhibits marks

of design. These two assumptions are evidently the premises from which the conclusion is deduced; for if either of them be false, the conclusion must be false, and if both of them be true, the conclusion must be true. As then both of these assumptions are absolutely essential to the truth of the conclusion, the mind must have contemplated them in coming to the conclusion; for otherwise it would not be warranted in forming any such conclusion. Indeed, it is impossible to form such a conclusion, without considering both of these assumptions; for they are the evidence upon which it rests.

Now let us look back over what we have been doing, and we shall see that, in developing the argument, we have formed it into a complete syllogism. As developed, it is thus: "Whatever exhibits marks of design has an intelligent author. The world exhibits marks of design. Therefore, it has an intelligent author." This is a complete syllogism. The first sentence is the major premiss; the second, the minor; and the third, is the conclusion. The minor premiss was expressed in the argument as we first stated it: but the major was not. When we denied the truth of the argument, we found, that in order to sustain it, we must adduce other evidence than was expressed; and the other evidence is the major premiss of the syllogism. The mind, then, must have contemplated this major premiss; else, it came to the conclusion upon insufficient evidence. In fact, the major premiss is implied in the minor; as it must always be: and therefore, the mind must of necessity have contemplated it. The argument as we first stated it, is the form in which we

generally speak or write our arguments; for we never express all the evidence which passes before the mind in argumentation, but use expressions which imply the truth of what is considered evident. When, therefore, we wish to analyse and delineate the process which takes place in reasoning, we must consider every step of an argument—take hold of the attenuated clew, and pass along all the most winding and intricate passages of the mental labyrinth, and find out what is not usually expressed. If we do this with any argument whatever, and add to it all that is understood, it will then be a syllogism, or series of syllogisms. The very argument by which we have endeavoured to establish the point under consideration, may be formed into a series of syllogisms, by merely supplying what is understood.

As we have established the point, that every argument, when stated in full and in logical order, is a syllogism, or a series of syllogisms, we will next ascertain what are the acts of the mind, which take place in the syllogism, as we shall thus ascertain what are the acts of the mind which take place in reasoning.

The fundamental principles of the syllogism are; first, if two terms agree with one and the same third term, they agree with each other; secondly, if one term agrees and another disagrees with one and the same third term, these two disagree with each other. On the former of these principles, rests the validity of affirmative conclusions; on the latter, of negative. In the argument above, to prove that the world has an intelligent author, we found out a third term, with which both the subject and predicate of the proposi-

on agree, which third term is, "whatever exhibits marks of design." Because if both the subject and the predicate of the proposition agree with this third term, they agree with each other. We see, then, that in every affirmative syllogism there are three agreements. The major and minor terms agree with the middle term, and they therefore agree with each other. And that in every negative syllogism, there are two disagreements. Either the major or minor term agrees with the middle term, and the other disagrees with it, and they therefore disagree with each other. Now, how are agreements and disagreements ascertained?—Why, by comparison. The acts of the mind, therefore, which take place in the syllogism, are a comparison of two terms, with a third, and if they agree with it, then an inference that they agree with each other; and if either of them agrees, and the other disagrees with the third term, then an inference that they disagree with each other. All reasoning, therefore, proceeds by comparison. We have exhibited this point, because we frequently meet with expressions, in the best writers upon logic and metaphysics, and also in the writings of all classes of authors, which imply that all reasoning is not by comparison: and also because we have seen some able writers running to the opposite extreme, and confounding the simple act of comparison with the reasoning process, which as we have shown, consists of several acts of comparison, and an inference from them.

We will now for the purpose of inquiring more minutely into the nature of the reasoning process, take a syllogism to pieces, and examine its parts, so as to ascertain

their nature and their mutual relations to each other.

The syllogism is composed of three propositions, two of which are the premises, and the other is the conclusion. For example, in the syllogism which we have been using all along, the proposition, "Whatever has marks of design has an intelligent author," is the major premiss; the proposition, "The world, exhibits marks of design," is the minor premiss; and the proposition, "The world, therefore, has an intelligent author," is the conclusion. It is upon the mutual relations existing between these propositions, and upon the mutual relations existing between their respective parts, that all the rules of logic are founded. It is intuitively manifest, that both the minor premiss and the conclusion, are embraced in the major premiss, as parts of a whole. If the major and minor propositions be granted, the conclusion must necessarily follow: indeed the truth of the conclusion is assumed in them. When, therefore, we assert the truth of the major and minor premises, we virtually assert the truth of the conclusion also. We see, then, that in every argument, the conclusion is contained or assumed in the premises, and that the conclusion is not a different truth from the premises, but is one of the truths contained or assumed in the major premiss, which is nothing more than a general truth, of which the conclusion is a particular instance. When, therefore, we draw a conclusion, we do not, strictly speaking, ascertain a new truth, but merely develope in a particular instance, a general truth known to us before. The great general principle which governs these mutual relations existing between the premises and conclusion,

is the fundamental principle of logic, and is called the "Dictum de omni et nullo" of Aristotle. It is this: "Whatever may be predicated (affirmed or denied) universally of any class, may be predicated (affirmed or denied) in like manner of any thing comprehended in that class." The application of this principle to the major premise, as comprehending the minor and the conclusion, is obvious: for if it can be affirmed universally of the class of things exhibiting marks of design, that they have an intelligent author, it can necessarily be so affirmed of the world, if it be one of the things comprehended in that class. This maxim may be called the formula of demonstration, a general argument, of which every other is a particular instance. And the man who violates it in argumentation, is to the eye of enlightened reason guilty of as gross an absurdity as he who attempts to raise himself over a fence by the straps of his boots.

We have now given an outline of the logic taught by Aristotle in his *Organon*: and will next introduce to our readers the Method of Investigation taught by Bacon in his *Novum Organon*.

From the expressions quoted at the beginning of our analysis of the reasoning process, and from many such that are found in the best writers of every class, one might suppose that Lord Bacon had taught a new mode of reasoning: and that his *Novum Organon* was designed to supersede altogether the *Organon* of Aristotle. This is an entire misconception of the whole subject. The design of the *Novum Organon* was not to teach a new mode of reasoning; but to teach a new method of investigation. The *Novum Organon*

has, therefore, a very different province from that of the *Organon* of Aristotle. The province of the latter is to analyse the process of the mind which takes place in reasoning: and to furnish a model to which sound reasoning may be reduced and by which the correctness of every argument may be tested, in its conformity to the model; and to furnish rules relative to the whole matter, as we have shown.

But the *Logic* of Aristotle was supposed by its author and the other Greek philosophers to be an instrument of much more importance in the investigation of truth, than it really is, and was therefore applied to the investigation of the sciences, and is called the *a priori* method of investigation, and it is as a method of investigation, that the *Novum Organon* is designed to supersede the *Organon* of Aristotle, as we will now proceed to show.

The Greeks were an astute and exceedingly disputatious people, inordinately fond of dialectical disquisitions; and it was in this spirit, that the Greek philosophers conceived that the reasoning process was the chief process in the investigation of the sciences, or in other words that, the *a priori*, was the true method of investigation. And it was at a period in the history of Greece when her philosophers were wholly given up to abstract studies, that Aristotle's *Organon* had its origin; and it may be considered as a systematical developement of the method of investigation pursued by the Greek philosophers, who carried the *a priori* method of investigation which had proved successful in mathematical inquiries to which it is adapted, into physical and metaphysical inquiries, supposing that as

in the mathematics, so in physics and metaphysics, every thing can be reasoned out from a few simple notions or principles. And in accordance with this opinion the Greek philosophers were always endeavouring to find out these simple principles in nature, which they supposed would be productive of such rich results in science. In psychology, we find some maintaining the doctrine of innate general ideas or principles from which not only all metaphysical but all physical truths also were to be reasoned out; and in physics, we find one making water, another the infinitude of things, a third, air, and at last Aristotle, making form and privation combined with matter, the principles of all things: and though Aristotle did not maintain that these simple notions or principles were an innate knowledge of the mind, yet he seemed to think that they might be recognised affirmatively at the first glance of contemplation of an instance furnished through sensation, and that therefore, the chief process in the acquisition of truth, is in deducing conclusions from principles, and not in ascertaining principles.— And these miserable abstractions were the clews by which the Labyrinths of nature's secret places were to be passed through, and the truths of physics and metaphysics ascertained by reasoning from them.— This misapplication of logic as a method of investigation could not but lead to error. For logic does not guaranty the truth of the premises of an argument, unless they are conclusions from previous arguments, but always proceeds upon the hypothetical truth of the premises. It merely guaranties the truth of the conclusion, as an inference from the premises; its province,

as we have shown, being to deduce conclusions from admitted premises. Its tendency, therefore, is to make us overlook the truth of the premises; as it furnishes no rule in regard to their truth, but merely in regard to the truth of the conclusion as an inference from them. And this is the very evil which it produced.

This misapplication of logic as a method of investigation, led inevitably to the most absurd theories in physical science imaginable. As an example, we will cite Aristotle's argument in proof of the immutability and incorruptibility of the heavens, as it is exhibited by Galileo.

"1st. Mutation is either generation or corruption.

"2d. Generation and corruption only happen between contraries.

"3d. The motion of contraries is contrary.

"4th. The celestial motions are circular.

"5th. Circular motions have no contraries.

"A. Because there can be but three simple motions.

"1st. To a centre.

"2d. Round a centre.

"3d. From a centre.

"B. Of three things, only one can be contrary to one.

"G. But a motion to a centre is manifestly the contrary to a motion from a centre,

"D. Therefore, a motion round a centre (i. e. circular motion) remains without a contrary.

"6th. Therefore, celestial motions have no contraries; therefore, among celestial things there are no contraries; therefore, the heavens are eternal, immutable, incorruptible, and so forth."

Such is a striking example of both the method and

the results of the ancient mode of philosophising. In it are exhibited a total disregard of facts and phenomena and a pompous and conceited affectation of system, which admirably illustrates the intellectual pride and vanity of the Greek philosophers, who paid no regard to their premises, as facts founded in nature; but vainly hoped to rear up a system of natural philosophy corresponding with the indications of nature, merely by deducing conclusions from assumed premises not ascertained by observing nature, but purely the fictions of their own imaginations. And to just as gross absurdities were the greek philosophers led in mental philosophy, by their disregard of facts and phenomena, as they were in physical. We will cite as an example, the doctrine of sensation, or the mode in which the mind perceives objects as taught in the Peripatetic school. A kind of images, or sensible species as they were called, were supposed to come off from all objects and to pass to our different organs of sense, and were by them admitted to the nerves, and through them conveyed to the brain, where they were impressed as the engraving of a seal on wax, and were then refined into intellectual species, after the mind fully apprehended them. We might cite many other examples of like absurdity: but our object is merely to illustrate the point under consideration.

The logic and philosophy of Aristotle obtained the greatest favor at Rome under the Cæsars. At an early period however, in the Christian world, Plato had displaced Aristotle, and continued the most generally received philosophy until the close of the fifth century, when the influence of Aristotle began to prevail again,

and though it declined a little during the sixth century at the close of the seventh, it was every where triumphant throughout the civilized portions of Europe, Asia and Africa. Christians, Jews and Mahometans bowed before his authority. Commentaries, paraphrases, summaries and dissertations on his works were composed without number in both Arabic and Latin. His works were appealed to in all disputes as infallible authority: and none dared dissent from the "Great Master." During this period, the study of nature was still more neglected than it had been by the Greeks. Mere abstractions, figments of the mind, usurped the place of even the few facts contained in the Greek philosophy. Men's minds were in a continual ferment about occult qualities and essences—about proportion, degree, infinity, formality, and innumerable other abstractions; and such was the height to which controversy ran about these chimeras of the mind, that it often resulted in bloodshed, and well nigh convulsed kingdoms. Every one seemed to think that, "the chief end of man, is to contradict his neighbour, and to wrangle with him forever." The different parties had their rival chiefs decked out in all the titles of philosophical heraldry, such as "the invincible," "the most profound," the "angelical," the "irrefragable doctor," to lead them on to the wordy war. And now the most absurd notions were worked up into systems of philosophy. As the great master Aristotle had taught, as we have shown, that a uniform circular motion was the only motion consistent with the perfection of the heavenly mechanism, this notion was worked up into a most unwieldy and complicated theory of astronomy,

exhibiting the sun, moon and planets revolving in circles, whose centres were carried round in other circles, and these again in others, and so on without end—"cycle upon epicycle, orb on orb," throughout the infinitude of space. But a still more absurd astronomical theory was gravely presented to the world in the sixth century by Cosmas Indopleustes, who maintained, says Maclaurin in his account of Sir Isaac Newton's philosophical discoveries, that "the earth was not globular but an immense plane of a greater length than breadth, environed by an unpassable ocean. He placed a huge mountain towards the north, around which the sun and stars performed their diurnal revolutions; and from the conical shape which he ascribed to it, with the oblique motion of the sun, he accounted for the inequality of the days and the variation of the seasons. The vault of Heaven leaned upon the earth extended beyond the ocean, being likewise supported by two vast columns: beneath the arch, angels conducted the stars in their various motions. Above it were the celestial waters, and above all he placed the supreme heavens." Such then was the state of knowledge produced by implicit obeying authority, and following the ancient method of philosophising, of endeavouring to deduce systems of philosophy from a few imaginary principles—of misapplying logic as a method of investigation.

It was during this state of knowledge, though light had begun to break in upon the darkness, that Lord Bacon was born. While yet a student at Trinity College, Cambridge, he discerned the vagueness and inutility of the existing state of knowledge; and as he advanced in

age, he saw the more clearly the utter worthlessness of all the reigning speculations of the day; for, there being no connection whatever between them and the arts, they did not minister at all to the comforts of man, or arm him with any power over nature. As this great genius meditated upon the immense growth of pernicious error which had sprung up in every province of knowledge, he plainly saw, that it was in a great measure the product of the extensive influence which Aristotle possessed in the schools, diverting the minds of men from the study of nature to the study of his doctrines; and that the authority of Aristotle must be overthrown, before man could be brought back into the true paths of science. For although the discoveries of Copernicus, Kepler and Galileo had in some degree broken the magic spell of the enchanter of Stagira, it remained for a genius of a loftier tone to show its delusion and folly by pointing out its nature; and to rouse up the minds of men from slavish obedience to authority, by pouring into them the quickening influences of his own free spirit. All this Bacon designed to accomplish by his *Instauration of the Sciences*; and to lead men back into the true paths of science, from which they had so long wandered.

The *Instauration of the Sciences*, was designed by Bacon to consist of six parts: but as he wrote but little of the third, fourth, fifth and sixth parts, we will say nothing of them. The first part is the *Advancement of Learning*, in which he sketches out all the departments of knowledge and defines their limits; and shows the degree of cultivation in each. In concluding this part of his great work, he says, "thus have I made, as

it were, a small globe of the intellectual world as truly and faithfully as I could discover, with a note and description of those parts, which seem to me not constantly occupate or well converted by the labour of man."

The second part of the Instauration of the Sciences, is the *Novum Organon*, which it is our object now to illustrate. As, in the *Advancement of Learning*, Bacon sketched a map of the sciences, in the *Novum Organon*, he develops the method by which they are to be investigated. He here proclaims the great truth, and develops it, that the knowledge of the philosopher does not differ in kind but only in degree, from that of the peasant—that the whole of philosophy is founded on observation, and is nothing more than a classification of facts and phenomena presented in nature, rising first, from particulars, to classifications of the lowest degree of comprehension, and then from these, to those of a higher degree, and so on, until we arrive at classifications of the highest degree comprehending all the subordinate classifications. And that these classifications are the only *true* general conceptions; as they are the only ones which have any thing corresponding to them in nature; and that the ideas or forms of Plato, and the empirical general conceptions of Aristotle have no counterparts in nature, but are the mere fictions of their own imaginations, and therefore are not a proper foundation of science. In a word, he declared that all philosophy is written in the book of nature, the material and spiritual worlds. He set forth this great truth in the very first proposition of the *Novum Organon*: "Man as the servant and interpreter of nature,

does and understands as much as his observations on the order of nature, either with regard to things or the mind, permit him, and neither knows, nor is capable of more." The spirit of this philosophy is humility. It teaches that in order to become philosophers truly so called, men must cast off that intellectual pride which vainly strives to find out the secrets of nature by mere reasoning, and become as children, reading in humility the simplest lessons in the book of nature. "The access to the kingdom of man which is founded on the sciences," says Bacon, "resembles that to the kingdom of Heaven, where no admission is conceded except to children." Noble and sagacious comparison! With what philosophic forecast does it portray the spirit of true philosophy! For as those who recognise the doctrine of humility in divine truth, have planted, upon the strongest fortresses of paganism, the white banner of Christianity, with the lonely star of Bethlehem shedding its mild beams from its ample folds as it waves over the worshippers of the true God; so those who recognise it in human truth, have pushed their conquests into every province of nature, and even scaled the very Heavens, and planted the standard of the Baconian philosophy upon the remotest star, demonstrating by their success that the humbling precept, "become as little children," is as true in philosophy as in religion. It is obedience to this precept which confers on man all his power over nature—gives him access to the kingdom founded on the sciences.

The method of investigation, according to this view of philosophy, proposed by Bacon in his *Novum Or-*

ganon, he calls Induction, which means "a bringing in;" because it proposes to bring into philosophical investigations facts diligently sought out in nature, and after carefully examining them in all possible lights, to educe some general principle from them which they clearly indicate. The developement of this method, by showing its nature and efficiency, and exposing the sources of error in philosophical investigations and laying down precepts for conducting them right, so as to enable the humble and sincere inquirer to guard against error, constitute the *Novum Organon*. Such then is the remedy which Bacon proposed for rectifying the evils of the ancient philosophy; and for enabling man to establish a true practical philosophy that would extend his empire over all the dominions of nature.—He sketched a chart to guide the humble voyager on the vast ocean of knowledge; and erected beacons to warn him where his barque might be stranded.

It is evident from this view of the subject that the *Novum Organon*, was not designed to teach a new mode of reasoning; and thus to supersede the *Organon* of Aristotle in its legitimate province of analysing the process of reasoning, and exhibiting rules for conducting it aright: but merely to supersede it as an instrument of investigation in the sciences, to which it had been misapplied both by its author and his followers, especially those of modern times. The *Novum Organon* is not in fact a treatise on logic at all: but rather a treatise on evidence; for it treats more particularly of premises, than of conclusions; and the premises are the evidence, which prove the conclusion of an argument; for when we set out with a conclusion which is

then called a proposition, the evidence which we adduce to prove it would constitute the premises, if we set out with the premises, in order to deduce the conclusion from them. Lord Bacon, after surveying the whole of ancient philosophy, saw that it was not sustained by legitimate evidence—that the premises (so to speak) of the arguments were either plainly false, or mere assumptions not proved; and he proposed in his *Novum Organon*, that men should examine facts and phenomena (the only legitimate evidence,) before they form theories—interpret nature and have legitimate premises, before they deduce conclusions. He did not design to show that their conclusions were not logically deduced from their premises, or that the syllogistic rules laid down by Aristotle for conducting this process were erroneous.

But if Bacon did design to teach a new mode of reasoning, he has signally failed of his purpose; for we have shown that the syllogism is the process which must take place in all correct reasoning; and we will now proceed to show that *Induction* is a very different process, and not a process of reasoning at all. What is *Induction*? It may be defined, a process of investigation and of collecting facts and phenomena, either with or without a view, to establish some general principle already suggested to the mind. It is manifest that the mere investigation and collection of facts and phenomena *without* a view to establish some general principle already suggested to the mind, is not a reasoning process. It therefore, only remains to examine the other, the investigation and collection of facts and phenomena *with* a view to establish some

general principle already suggested to the mind. In this last case, the investigation and collection of facts and phenomena, is conducted on the supposition or presumption of the existence of a general principle or law; and is directed with a view to establish it, by the examination of a sufficient number of facts and phenomena. For example:—A naturalist, after seeing for the first time, a duck or any other water-fowl, might be led to infer that all water-fowl have web-feet; and might therefore proceed to search for other water-fowl, until he found the goose, the pelican, the swan, &c.; and would then be convinced of the truth of the general principle, that all water-fowl have web-feet.—Now, this is certainly not a process of reasoning; for it is conducted upon the supposition or presumption merely, of the existence of the law or general principle, and not upon the absolute certainty of its existence; for it would then not be investigation, but demonstration or reasoning from known premises, to something taken for granted in those premises, as we have shown reasoning always to be. The inductive process is not governed by principles of logic, but by principles of evidence. For instance:—In the example above, the naturalist supposed from the fact, that one water-fowl, the duck, has web-feet, that all water-fowl have web-feet. Now, this is evidently a mere supposition from testimony not sufficient to convince the naturalist; he therefore searches for other water-fowl (other testimony) and finds the goose, the pelican, the swan, &c. and is convinced by this accumulated testimony of the general principle that all water-fowl have web-feet.—The mental determination is effected by testimony,

and not by rules of logic. The conclusion is not implied in the very conception of the premises, as is always the case in reasoning; but it is warranted by the probabilities founded in the analogies of nature and in the constitution of the human mind. The inference is founded upon material relations, and not upon logical. The conclusion is probable; but not necessarily certain, as is always the case in logic; for logic never proves with any but the highest degree of certainty, the inference being never deduced from probabilities, but necessitated by the very laws of thought. The relation between the premises of an argument and the conclusion, is that of reason and consequent; and the material relations of the objects expressed by the terms have nothing to do with the inference of the one from the others; for in reasoning, the inference is effected, *vi termini et rationis*, and not *vi materiae*.—And reasoning always proceeds from a class to a particular, or from a class of greater comprehension, to one of less; and every class is established by induction: to make a class, then, a prerequisite of induction, as we must do, if we make induction, reasoning, would be absurd; for every induction would then be the result of some previous induction, in infinitum; and it would make our highest abstractions or generalisations, the first in order of time in the acquisition of knowledge, which is a psychological doctrine that is repudiated by the whole Baconian philosophy; as will be seen in the next chapter.

It is manifest, we think, from this analysis, that induction is the reverse of the syllogism. Induction proceeds from particulars to a class of low degree, and

from several classes of a low degree to those of a higher, until we arrive at those of the highest degree. On the contrary, syllogism proceeds from classes of the highest degree to those of a lower, and from those of the lowest degree to particulars. The two together constitute one complete system of processes by which knowledge is acquired and perfected. For very often we cannot be satisfied that we have arrived at a correct inductive conclusion or statement of a law of nature, until we make such conclusions or law a ground of argument, and show by strict reasoning that the phenomena observed are consequences of it. For example: in reasoning from the law of gravity, we discover, by the application of the general laws of dynamics, that all the planets must attract each other, and therefore draw each other out of the orbits in which they would have moved, if acted upon by the sun only; and thus circumstances are discovered by which our general conclusion is strengthened, and which could not have been discovered otherwise, as it required some such conclusion which could only be obtained by strict reasoning, to direct attention to such minute inquiries; and a correct theory is thus obtained. This use of reasoning in inductive inquiries will be more particularly explained in the sequel, when we speak of the application of mathematics to physical inquiries.

In further illustration of the nature of induction, we will now inquire into the nature of the methods of analysis and synthesis.

We frequently see analysis called the inductive process, and synthesis called the hypothetical process, the process of the ancients. This is very erroneous.

Synthesis is just as much of an inductive process as analysis; and is, in fact, more extensively used by the Baconian philosophers than analysis. Analysis and synthesis are terms derived from the ancient Greek geométricians; and are of quite a different nature in the mathematics from what they are in the other sciences. In mathematics synthesis is just the reverse of analysis; but it is not so in the sciences of contingent truth. In these, analysis is the process of investigation by observation and experiment; and synthesis is the process of explaining other phenomena by means of the general fact or law ascertained by analysis.— Synthesis is just as much of a process of investigation as analysis; and is more frequently used as such. For we are frequently led to an inference analytically, without our induction of facts being sufficiently extensive to satisfy us; we therefore bring to our aid synthetically facts which we had not before examined.— At the time we are explaining facts synthetically we are establishing the inference which we derived analytically; because if the inference will explain the facts, the facts will, of course, support the inference. Analysis and synthesis are; therefore, both processes of induction; for by both of them we enlarge the number of our facts. Indeed, most of the discoveries in the inductive philosophy have been made chiefly by synthesis. The phenomenon of the rainbow was explained by it. Sir Isaac Newton, by experiment with the prismatic spectrum, discovered that light is composed of seven rays, of different colours, and of different degrees of refrangibility. By this fact, thus analytically established, he explained the phenomenon

of the rainbow synthetically; and the phenomenon thus explained, establishes the fact that light is composed of seven rays of different colours and different degrees of refrangibility. The phenomenon of the rainbow could never have been explained analytically. We might have looked at it forever, and would still be unable to explain its cause from mere observation, no matter how minute. The science of astronomy has been reared chiefly by synthesis. Newton, from an examination of the phenomena of motion on the earth, inferred the principle of gravity, and by the principle of gravity thus analytically ascertained, he explained synthetically the phenomena of the whole solar system. It would have been impossible ever to have explained these phenomena by analysis. In the preface to his *Principia*, Newton says: "All the difficulty of philosophy seems to consist in this: from the phenomena of motions, to investigate the forces of nature, and then from these forces to demonstrate the other phenomena; and to this end the general propositions in the first and second books are directed. In the third book, we give an example of this, in explanation of the system of the world; for, by the propositions, mathematically demonstrated, in the first book, we then derive from the celestial phenomena the forces of gravity, with which bodies tend to the sun and the several planets. Then, from these forces, by other propositions, which are also mathematical, we deduce the motions of the planets, the comets, the moon, and the sea." Now, this is an outline of the method of investigation pursued in the *principia*, given by Newton himself; and we see that synthesis is much more extensively used than analysis.

Analysis was employed in the first step of the investigation—"from the phenomena of motions to investigate the forces of nature." The demonstration of the other phenomena from these forces is by synthesis, and constitutes the great portion of the immortal work.—The copy of the *Principia* which we have before us was edited by that distinguished mathematician Roger Cotes. In his preface to the work, in speaking of those who profess experimental philosophy, he says: "They therefore proceed in a twofold method, synthetical and analytical. From select phenomena they deduce, by analysis, the forces of nature, and the more simple laws of forces; and from thence, by synthesis, show the constitution of the rest. This is that incomparably best way of philosophising which our renowned author most justly embraced before the rest, and thought alone worthy to be cultivated and adorned by his excellent labours. Of this he has given us a most illustrious example by the explication of the system of the world, most happily deduced from the theory of gravity." We might adduce innumerable other examples; indeed, we might bring forward the whole of science in illustration of our position, but we have sufficiently exemplified it; for, after showing that the greatest monument of which the inductive philosophy can boast was reared chiefly by synthesis—that much the largest induction of facts was made by this process, it is unnecessary to dwell longer on examples. Perhaps it may be objected to this last example that we are confounding, by citing it, the distinction which we have made between synthesis and analysis in the mathematics and the sciences of contingent truth. A little

reflection will remove this objection. The application of mathematics to the sciences of contingent truth, does not take them out of the pale of induction; because the whole object of such application is to explain the phenomena, by comparing the results of the demonstrations from the assumed data with observed facts, and thereby ascertaining from the agreement or disagreement of the results of the demonstrations with observed facts, whether the data or principle inferred by analysis, upon which the demonstrations are based, be true or false. An appeal must be made to experience, in every particular instance of the application of mathematics to natural philosophy, to see whether the results of the demonstration correspond with observed phenomena, no matter how well established the general principles of the particular science may be considered; for it is in this way only that mathematics gives certainty to theories in natural philosophy, or in other words, strengthens our inductive conclusions; because until we ascertain that such phenomena do exist as the demonstrations show to be necessary consequences of the assumed principle, we cannot be sure of the truth of the principle. For example: when demonstration showed that if the principle of gravity be true, there must exist certain inequalities and deviations in the motions of the planets, produced by their mutual action upon each other, drawing each other out of the orbits they would have moved in if acted upon only by the sun, we could not be certain of the truth of the principle of gravity until we ascertained that these phenomena did really exist; and then the principle would explain the phenomena, and the phenomena

support the principle. Both the analytical and synthetical processes of induction then, are aided by the application of mathematics. Though, in testing the truth of the conclusion or principle arrived at by the analytical process of induction by applying mathematics to it, you must assume the truth of the conclusion or principle, and then deduce from it, the phenomena from which the conclusion has been inferred. And thus it is apparent, that the analytical process is aided by the application of mathematics, in the very same way that the synthetical process is: for in applying the mathematics to aid the synthetical process, you must assume the truth of the conclusion or principle arrived at by analysis, and deduce from it, the phenomena which you are seeking to explain by that conclusion or principle, and in this way prove the analytical conclusion by these phenomena thus synthetically explained, and show that they belong to the same class with those from which the analytical conclusion was inferred. And both processes will thus result, in proving the general principle inferred in the analytical process. This application of mathematics in aid of the inductive process is spoken of by Bacon in the ninety six aphorism of the second book of the *Novum Organon*, where he says "that mathematics ought rather to terminate natural philosophy than to generate or create it."

Let it not, then, be said that analysis is the inductive process, and synthesis the ancient. They are not processes of reasoning; for they both are conducted on the supposition or presumption merely of the existence of a law or general principle, and are directed with a view to establish it, by the examination of a

sufficient number of facts: and not on the absolute certainty of the existence of the law or principle, which is the case in reasoning. They are the processes by which we acquire all our knowledge of philosophy; and the two together constitute what is meant by induction in its largest sense. For example: something suggests a general principle or law; we then try whether it is sustained by other facts, or, which is the same thing, whether it will explain other phenomena of the same kind. The first step is analytical, the last synthetical; and the whole is induction: and the whole series of inductions by which the sciences have been reared, were of this nature—conclusions from a few instances proved by trial upon many; and while we have been explaining the nature of analysis and synthesis, we have been explaining the nature of induction. This view of induction is taken by Bacon himself in the 103 aphorism of the first book of the *Novum Organon*. Speaking of the mere examination of particulars, he says, “comparatively insignificant results are to be expected from thence, whilst the more important are to be derived from the new light of axioms, deduced by certain method and rule from the above particulars; and pointing out and defining new particulars in their turn. Our road is not along a plain, but rises and falls, ascending to axioms, and descending to effects.” It is obvious, that the terms *ascending* and *descending* describe what are now called the analytical and synthetical processes; and it would perhaps be better, if the terms analysis and synthesis were banished from the sciences of contingent truth, and the terms ascending induction, and descending induction

substituted for them, in accordance with the phraseology of Bacon; because there is not the same difference between the terms analysis and synthesis in the sciences of contingent truth, that there is between them in the mathematics, and the retention of them is therefore calculated to mislead. As methods of *instruction* in what is already known, they are the reverse of each other; and so they would be as methods of investigation in all the branches of natural philosophy to which mathematics can be applied, if all the phenomena were known, and the mathematics were perfect, so as to render these branches of natural philosophy as much a matter of strict reasoning as geometry.

As we have shown that induction is carried on, by principles of evidence and not by principles of logic, we will offer some reflections upon philosophical evidence; and develop induction further than Bacon did, and give it a more systematic form.

We frequently see Analogy spoken of in the best writers as a fallacious sort of evidence, that ought not to be admitted into the inductive philosophy. This is very erroneous; for analogy is true inductive evidence. What we mean by inductive evidence, is evidence founded in the constitution of nature—real evidence, as opposed to mere hypothesis. And what we mean by evidence, is whatever is clothed by nature with the power of producing conviction in our minds, when it is fully apprehended, even in spite of ourselves.—As to the first point, that analogy has a real foundation in nature, no one can object; for we can trace it every where. And as to the other point, whether it is clothed by nature with power to produce conviction

tion in our minds solid enough to be the foundation of sound inductive inferences, we think there will be as little objection, after diligent inquiry into the matter. The conviction produced by analogy between facts or phenomena, has the very same foundation that the conviction of the existence of the most familiar object has. They are both founded in our mental constitution, on what is called by metaphysicians, fundamental laws of belief. If we see an object we cannot but believe in its existence: so if we perceive an analogy between phenomena, we cannot but believe that they are produced by a similar or common cause.—But why the conviction is produced in either case, is not known to us, and never can be in this state of existence. It is beyond the boundaries of philosophy.—Having laid this foundation, we will now proceed to show the importance of analogical evidence, and also to exhibit its nature, and finally, to indicate the general principle by which our estimate of its force is to be regulated.

There is no science whatever in which analogical evidence is not of great importance. In medicine, a remedy is frequently suggested in one disease, from its having been efficacious in an analogous disease.—In anatomy also, it is of much importance. One of the noblest monuments of human reason is the osteology of Baron Cuvier; and this has been reared almost exclusively upon analogy. In moral science also, it has its monuments. The ablest defence of Christianity that has ever been submitted to the world, is founded altogether upon analogy. We mean the work of Bishop Butler—a work that has done more to make

plain the ways of providence in the moral economy of the world, than almost any other human production. This work alone is sufficient to entitle analogy to the character of admissible evidence in philosophy; for if it be admissible in one science, it must be admissible in all, as it must have the same relative strength in all. But we will not confine ourselves to general propositions: but will select instances in which analogical evidence has been the foundation of discoveries in natural philosophy, as the best mode of enforcing our views.

The conjecture of Newton that the diamond is a combustible body, which has been always thought to evince such marvellous sagacity, was founded upon the analogy of its effects upon light, to those of other combustible substances. Kepler having ascertained the orbit of Mars about the sun to be an ellipse, having the sun in one of its foci, the same law was immediately extended by analogy to all the planets; and was found in time to hold good in the case of each: and when Jupiter's disc and satellites were afterwards discovered by Galileo, the same law was immediately extended by analogy, to this miniature system, and found to hold good: and the law was thus found to depend on the nature of planetary motion. All of which has since been mathematically demonstrated by Newton. Here, then, are conclusions from analogy in reference to the most difficult subjects, demonstrated to be correct by the most rigid application of mathematics; and the conjecture of Newton about the nature of the diamond, has been proved to be correct by modern chemistry. But perhaps the most beautiful

instance of the use of analogical evidence, within the whole range of natural science, is to be found in the theory of dew by Dr. Wells. It is selected by Sir J. W. F. Herschel, "as one of the most beautiful specimens of inductive experimental inquiry." And as he has selected it as an example of inductive search without regard to the kind of evidence on which it rests, we will select it as an example of inductive search conducted upon analogical evidence, and will give it in the words of Herschel: "Let us now exemplify this inductive search for a cause, by one general example: suppose dew were the phenomenon proposed, whose cause we would know. In the first place, we must separate dew from rain and the moisture of fogs, and limit the application of the term to what is really meant, which is, the spontaneous appearance of moisture on substances exposed in the open air, when no rain or visible wet is falling. Now here we have analogous phenomena in the moisture which bedews a cold metal or stone, when we breathe upon it; that which appears on a glass of water fresh from the well in warm weather; that which appears on the inside of windows, when sudden rain or hail chills the external air; that which runs down our walls, when, after a long frost, a warm moist thaw comes on: all these instances agree in one point, the coldness of the object dewed, in comparison with the air in contact with it. But in the case of the night dew, is this a real cause?—is it a fact that the object dewed, is colder than the air?—Certainly not, one would at first be inclined to say; for what is to make it so? But the analogies are cogent and unanimous; and therefore we are not to discard

their indications; and besides, the experiment is easy: we have only to lay a thermometer in contact with the dewed substance, and hang one at a little distance above it, out of reach of its influence. The experiment has therefore been made; the question has been asked, and the answer has invariably been in the affirmative.— Whenever an object contracts dew, it is colder than the air, &c.” We here see inferences founded on analogy, proved by actual experiment. If the example had been written with a view to the object for which we have selected it, the language could not have been more expressive of our doctrine; could not point out the analogies more distinctly. This fact gives great force to it, as an illustration of the use of analogical evidence in philosophical inquiries. But why need we dwell on minor examples, when in fact, it was analogical evidence which led Newton to break through the fetters of the dogma, of the ancients, that the celestial phenomena are in their nature and laws different from the terrestrial, and to connect the physics of the earth with that of the heavens, and to identify their laws. He discovered an analogy between the motions of a bomb shot from a cannon and the motions of the moon, and was thus led to infer that their motions were produced by the same cause, and regulated by the same laws; and from the analogy between the earth and the other planets, he concluded that the motions of their satellites were produced by the same cause that those of the moon were; and, finally, the analogy between the motions of the earth and of the other planets around the sun, and the motions of the moon around the earth, led him to infer that their motions were produced by

the same cause; and the application of geometry enabled him to verify these inferences. Thus we see, then, that it was by an induction founded upon analogies, that the law of gravity was established.

It is very important, then, as these examples show, to have a number of analogous instances, which class themselves with the one under consideration; because the explanation of one of them will be apt to lead to that of all the others. We may also perceive analogies between different sciences, and trace them until they terminate in some common phenomenon, more general than that which is the subject of either of them, and thus arrive at their common cause. This has been the case with electricity, magnetism and galvanism, for they have been discovered to be the same, or rather, the two last are particular instances of the first, by examining their analogies; and it is very probable from the strong analogies existing between the phenomena of light and sound, that they will at last be discovered to originate in a common cause, vibratory motion.

But we need not dwell longer on particular examples; for the truth is, all the evidence on which the inductive process is conducted, may be divided into analogy and identity, though of course, subordinate divisions may be made of these. As long as the subject of investigation is merely probable, no matter how great the probability, the process is founded on analogy. For example:—in the case of the theory of dew, which we cited, the whole process was founded upon analogy, until it was ascertained by experiment with the thermometer, that cold was the cause. And so in every

other science, we must proceed upon analogous instances, until we arrive at a common cause: and it has been done in every science from astronomy to chemistry.—By analogy, the philosopher can push his enquiries to the utmost verge of reasonable supposition. For example: we can with great probability infer that those stars, which have disappeared from the firmament, have been consumed by fire, from the analogy of the appearances exhibited by them to a great conflagration. The stars at first appeared of a dazzling white, then of a reddish yellow, and lastly of an ashy paleness until their light expired. “As to those stars” says La Place “which suddenly shine forth with a very vivid light, and then immediately disappear, it is extremely probable, that great conflagrations produced by extraordinary causes take place on their surface. This conjecture is confirmed by their change of colour, which is analogous to that presented to us on the earth, by those bodies, which are set on fire, and then gradually extinguished.” The analogies, are the harmony of the universe—the real music of the spheres.

Philosophical analogy is frequently confounded by logicians as well as by the general writer, with rhetorical analogy: but they are quite different. Philosophical analogy consists in any resemblance between phenomena, less than identity; as in all the examples which we have given. But analogy in rhetoric is a mere fanciful resemblance discovered by the imagination; and is used for mere illustration or ornament. For example: “the angry ocean, the howling winds.”—Here, the stormy state of the ocean is likened to the anger of man; and the noise of the winds, to the howl-

ing of a beast. Now man is naturally angry; but the ocean is only metaphorically so; and the beast naturally howls, but the winds, only metaphorically. The first is founded in nature, the latter, in fancy. So in Shakspeare's beautiful description of concealed love—

“She never told her love,
But let concealment, like a worm in the bud,
Feed on her damask cheek.”

That the worm feeds on the bud, is a fact in nature, that concealed love feeds on the cheek, is a fact in fancy. So in Bacon,—“But if it (the mind of man) work upon itself, as the spider worketh his web, then it is endless, and brings forth indeed cobwebs of learning admirable for the firmness of thread and work, but of no substance or profit.” That the spider makes a web is a fact founded in nature; that the mind of man makes one is a fact in fancy. In these examples it is easy to discern that the analogy is purely rhetorical; and it is used merely for illustration and ornament: but there are innumerable instances in the best writers where rhetorical analogy is used as the foundation of inductive inference, thus confounding it with philosophical analogy. In these examples, it is easy to discern, that the analogy is purely rhetorical, and is used merely for illustration and ornament. But there are innumerable instances in the best writers where rhetorical analogy is used as the foundation of inductive inference. For example Dr. Johnson in one of his reported conversations, talking of the want of memory, said, “No Sir, it is not true: in general every person has an equal capacity for reminiscence, and for one thing as well as another; otherwise it

would be like a person complaining that he could hold silver in his hand, but could not hold copper." It is very obvious that this is not an argument, as was supposed by the great talker. There is no philosophical analogy between the capacities of the mind and those of the hand—between the power of reminiscence, and the power to hold silver. The two instances cannot be brought under the same general principle or major proposition; there being no analogy between them on which an inductive inference, can be founded—and consequently, no argumentative conclusion can be drawn from the one to the other. The mind and the physical powers belong to two different classes of being. Could the inductive philosopher ever draw the inference that he could remember one thing as well as another, from the fact that he could hold in his hand, copper as well as silver? What analogy is there between the two powers? Certainly, none, but such as rhetoric may employ by way of illustration and ornament. On another occasion, the same individual used the following remark, "No, Sir, people are not born with genius for particular employments or studies; for it would be like saying, that a man could see a great way east, but could not west." This example is just like the other, and its fallacy may be more clearly seen, by putting the last part of the sentence, first. Thus: "A man can see just as well east as he can west, therefore he has as much genius for one study as another." Here the conclusion does not follow from the premises; because there is no analogy between the capacity of the mind and the power of the eyes, upon which the inductive inference can be founded, which constitutes the major

premis viz : "every being that can see as well east, as it can west, has as much capacity for one study as another." Then, the minor premis would be, "A man can see as well east as he can west;" and then the conclusion would follow, "Therefore, he has as much capacity for one study as another." It really appears like trifling, to expose such gross fallacies. But from the fact that the greatest minds are deluded by them, it is necessary to analyse them, and exhibit the nature of the error on which they are founded. But the most extraordinary instance of the confounding rhetorical analogy with philosophical analogy occurs in Bacon's Advancement of Learning and in the De Augmentis; and it shows how very delusive are such fanciful analogies. Bacon has absolutely based a department of philosophy upon them: or at least every instance which he has cited as an example of the subject matter of this department of philosophy, is tainted with the error which we are exposing. He tells us that there are some principles which are not peculiar to one science, but are common to several; and the department of philosophy which embraces these principles, he calls *Philosophia Prima*, primitive or summary philosophy. We will cite only one example: An infectious disease is more likely to be communicated while it is in progress, than when it has reached its height. This he says is a principle in medicine; and that it is also a principle in morals; for that the example of very abandoned men injures public morality less than the example of men whose good qualities have not all been extinguished by vice. The resemblance here is purely fanciful, too obviously so, to need illustration after

what has been said about the examples above. The most remarkable fact about this error of Bacon, is, that at the very time he cited these examples of his *Prima Philosophia*, he had in his mind the distinction which we are exhibiting, though he certainly could not have had a very distinct apprehension of it.—For he makes this remark in regard to the examples: “Neither are these only similitudes, as men of narrow observation may conceive them to be, but the same footsteps of nature treading or printing upon several subjects or matters.” They most undoubtedly are “only similitudes” and not analogies upon which inductive inferences can be based. And what is still more remarkable, in the fifty-fifth aphorism of the first book of the *Novum Organon*, he has mentioned as a source of error, the tendency in some minds, to “compare even the most delicate and general resemblances;” and that such minds, “readily fall into excess, by catching at shadows of resemblance.” These facts in relation to Bacon show the delusive nature of these fanciful analogies, and that though we may have a general notion of them, still we may be deceived in particular instances of even the most marked character.

One of the most beautiful illustrations of the difference between philosophical and rhetorical analogy is given by Mr. Burke in his letters on a regicide peace: “I am not of the mind of those speculators, who seem assured that all States have the same periods of infancy, manhood and decrepitude that are found in individuals. Parallels of this sort rather furnish similitudes to illustrate or adorn, than to supply analogies from which to reason. Individuals are physical be-

ings—commonwealths are not physical but moral essences.” And the same distinction is well expressed by Darwin in the preface to his *Zoonomia*: “The great creator of all things has infinitely diversified the works of his hands, but has at the same time stamped a certain similitude on the features of nature, that demonstrates to us, that *they are one family of one parent*.—On this similitude is founded all rational analogy; which so long as it is concerned in [comparing the essential properties of bodies, leads us to many and important discoveries: but when with licentious activity it links together objects otherwise discordant, by some fanciful similitude, it may indeed collect ornaments for wit and poetry, but philosophy and truth recoil from its combinations.” On rhetorical analogy, is founded most of the beautiful flowers of speech, which under the magic influence of genius, spring up on the most sterile subjects to beautify and adorn them: but it never can be made the foundation of inductive inference. It is from the nature of rhetorical analogy, that men have, in a great measure, formed their opinions of the force of analogical evidence in philosophy. It is highly important therefore, to distinguish between them.

Some have confined analogy to the resemblance of relations, both in philosophy and rhetoric. But this is unphilosophical and exceedingly inconvenient in practice; multiplying distinctions which cannot be kept up, by even the greatest degree of caution. In philosophy, every rational resemblance less than identity, is analogy; and so in rhetoric, every fanciful resemblance is analogy. In rhetoric, however, the ana-

logy is always between individuals of different species, and never between individuals of the same class. And it may here be remarked, that it is with rhetorical analogies, and not with philosophical, that wit is conversant: wit belongs to rhetoric, and not to logic.

From the analysis which we have made of the evidence on which induction is founded, the great fundamental principle of philosophical evidence is easily evolved. It is this: that in proportion as the analogy between instances is stronger, our inferences from one to the other is made with more and more confidence; and in proportion as it is weaker, they are made with less and less confidence. For example: an inference from one individual to another of the same class, is made with more confidence, than an inference from one species to another. The inferences of the anatomy of the human frame, for instance, are made with far more certainty from the analogies furnished in the dissection of a man, than from those furnished in the dissection of any other animal. This principle bears the same relation to induction, that the *Dictum de omni et nullo* of Aristotle does to the Syllogism. The *dictum* of Aristotle points out the connection between the premises and the conclusion of the syllogism, and this points out the connection between the particular instances and the inductive inference. And this principle is commensurate with the whole range of philosophical evidence, and embraces all the classes of prerogative instances set forth by Bacon in the second book of the *Novum Organon*, and connects them with the inductive inferences to be drawn from them. In its affirmative application it embraces the comparison of

instances and in its negative application, the rejection of natures. It is also of a very practical character; as it is applicable to the most general as well as to the most particular cases. And in its negative application, it checks the natural proneness of the human mind to make hasty inductions. We will call this principle, the *Dictum secundum magis et minus*.

We have now presented to our readers, a general view of logic and the method of investigation, and defined the limits of their respective provinces.

It has often been disputed whether Aristotle understood the inductive process. He certainly did know that there was such a process; for he frequently mentions it in his writings. But it is no less certain, that he had no idea of its scope and its great importance in philosophical investigations; but thought it of little importance in comparison with the Syllogism, as he supposed that natural philosophy could be discovered by reasoning from a few general principles, and that therefore, the reasoning process was every thing in philosophical inquiries, and induction confined to very narrow limits; though, at the same time, it must be admitted, that he had some notion of the necessity of resorting to nature for something like principles; for as an observer and collector of facts and phenomena he greatly surpassed all the philosophers of his time. "For in common logic, (says Bacon) almost our whole labour is spent upon the syllogism. The logicians appear scarcely to have thought seriously of induction, passing it over with some slight notice, and hurrying on to the formulæ of dispute. But we reject the syllogistic demonstration, as being too confused, and

letting nature escape from our hands. For, although nobody can doubt that those things which agree with the middle term agree with each other, (which is a sort of mathematical certainty) nevertheless, there is this source of error, namely, that a syllogism consists of propositions, propositions of words, and words are but the tokens and signs of things. If, therefore, the notions of the mind, (which are as it were the soul of words, and the basis of this whole structure and fabric) are badly and hastily abstracted from things, and vague, or not sufficiently defined, and limited, or, in short, faulty (as they may be) in many other respects, the whole falls to the ground. We reject, therefore, the syllogism, and that not only as regards first principles, (to which even the logicians do not apply them,) but also in intermediate propositions, which the syllogism certainly manages in some way or other to bring out and produce, but then they are barren of effects, unfit for practice, and clearly unsuited to the active branch of the sciences. Although, we would leave therefore to the syllogism, and such celebrated and applauded demonstrations, their jurisdiction over popular and speculative arts, (for here we make no alteration,) yet, in every thing relating to the nature of things, we make use of induction, both for our major and minor propositions. For we consider induction to be that form of demonstration which assists the senses, closes in upon nature, and presses on, and, as it were, mixes itself with action.

Hence also the order of demonstration is naturally reversed. For at present the matter is so managed, that from the senses and particular objects they imme-

diately fly to the greatest generalities as the axes round which their disputes may revolve: all the rest is deduced from them intermediately, by a short way we allow, but an abrupt one, and impassable to nature, though easy and well suited to dispute. But, by our method, axioms are raised up in gradual succession, so that we only at last arrive at generalities. And that which is most generalised, is not merely notional, but well defined, and really acknowledged by nature as well known to her, and cleaving to the very pith of things.

By far our greatest work, however, lies in the form of induction and the judgment arising from it. For the form of which the logicians speak, which proceeds by bare enumeration, is puerile, and its conclusions precarious, is exposed to danger from one contrary example, only considers what is habitual, and leads not to any final result.

'The sciences, on the contrary, require a form of induction capable of explaining and separating experiments, and coming to a certain conclusion by a proper series of rejections and exclusions.' Notwithstanding this explicit avowal by Bacon, that the logicians had some, though a very inadequate notion of induction, many have contended that Bacon claimed to be, and that he really was the discoverer of the inductive process. But the fact that Bacon was not the first to remark upon the inductive process, does not detract in the slightest degree from his merit as a philosopher—no more than the fact, that Copernicus and Kepler had hinted that the planets were held in their orbits by attraction, detracts from the immortal discoveries of

Newton. For though Bacon did not discover the inductive process, yet he was the first to develop its nature as a method of investigation, to show its transcendent importance, and to lay down rules for conducting it aright. What other men saw through a glass darkly, he saw clearly and confidently. It was he who poured the tide of fire over the fields of knowledge, and withered and consumed the poisonous growth, with which they were overrun, and prepared them for the rich harvests which have since been cultivated by the illustrious labourers who have followed his directions. When he was born, the temple of false philosophy still stood firm and the priests who ministered at its altars thought it eternal. He was brought up in the false creed, and soon learned all its mysteries: but his gigantic Anglo-saxon mind could not be dwarfed so as to wear the fetters of the schools. He saw the folly of the miserable pedantry which was mistaken for profound knowledge; and in the full strength of his convictions, he determined to overthrow the false systems amongst which men had been so long bewildered, and to free the human mind from the bondage of prejudice and canonised authority. With this design he wrote the *Novum Organon*; and let the splendid discoveries of modern science attest his success!

PART THE SECOND.

CHAPTER 2nd.

THE THEORY OF MIND ASSUMED IN THE BACONIAN METHOD OF INVESTIGATION.

“We must guide our steps by a clue, (says Bacon,) and the whole path, from the very first perceptions of our senses, must be secured by a determined method.” We will endeavor to fulfil the doctrine set forth in this proposition; and therefore, will continue in this chapter to develop the Baconian Method of Investigation, until we trace it up to the first impressions made upon the senses. In order to do this, it will be necessary to inquire into the psychology or theory of mind assumed in the Baconian Method of Investigation, and which the influence of that method upon English philosophy has caused to be developed by Locke and Reid.

As the best mode of effecting this object we will first show the points of contact between psychology and logic, and between psychology and the method of investigation; and then exhibit an outline of the two great systems of psychology, which have divided the opinions of philosophers, and show their correlative methods of investigation, by developing the points of affiliation and doctrinal identity between them.

The Creator of all things has established an order, an antecedence and sequence, in the phenomena of the universe of both matter and mind. The object of philosophy is to discover this order, by observing the phenomena, tracing their relations, and ascertaining the laws which govern them, for the purpose of building upon such discoveries, certain practical rules or arts for increasing the power of man. In the world of matter, we investigate the relations of material substances, and their actions either of a mechanical or chemical nature upon each other; and found upon these relations the mechanical and chemical arts, by which the physical powers of man are so much augmented in his knowing how to bring bodies into such circumstances as will give rise to their peculiar actions. So in the world of mind, we investigate the relations of its phenomena, their antecedence and sequence in the order of time, their relations to the world of matter, and their antecedence and sequence in the logical order, an order peculiar to the world of mind, and which has no existence in the world of matter.

The phenomena of mind may, for the convenience of this investigation, be divided into two classes,* namely, those which relate to the intelligence—to perception, consciousness, memory, induction and reasoning; and those which relate to the sensibility—to love, joy, hope, fear, anger, and all the other emotions; and upon the relations of the phenomena of both of these classes are founded certain practical rules or arts.—

*NOTE.—We are well aware that the phenomena of the *will* constitute a distinct class, but the division which we have made is sufficiently accurate for our purpose.

On the first, are founded logic and the method of investigation; and on the latter, are founded, morality and all the fine arts. It is with the first class, those which relate to the intelligence, that we have to deal in the investigation which we are pursuing; as it is amidst them that the connexion between psychology and logic, and between psychology and the method of investigation is to be discovered. Psychology by analysing the phenomena of reasoning, exhibits the fundamental laws of thought, which govern the mental acts in every demonstration: and logic exhibits the illative rules by which the conclusion is evolved out of the premises. This then is the point of contact between psychology and logic, the boundary where the one ends, and the other begins. Psychology also exhibits, by analysing the phenomena of induction, the fundamental law of thought which governs the mental determination in every act of belief that the future will be like the past, or that like causes will produce like effects; and the method of investigation exhibits the inductive rules or regulative principles by which the general conclusion is inferred from the particular instances. And this is the point of contact between psychology and the method of investigation. It is at these points of contact, that psychology supplies the deficiencies of logic and the method of investigation—gives light where they give none; for logic and the method of investigation pre-suppose psychology, and depend upon it for their whole strength.

But psychology penetrates still further into the mysteries of human thought, and as reasoning and induction assume the truth of the facts attested by per-

ception, consciousness and memory, it also analyses their phenomena, and evolves the fundamental laws of belief which govern all our knowledge derived from these sources respectively, and thus ascertains the very elements of human knowledge, which admit of no explanation, which borrow no light from any thing antecedent, but are self-luminous; and in this way supplies every thing which is assumed as true in logic and the method of investigation. With these preliminary remarks, indicating in a general way the connexion between psychology and logic, and between psychology and the method of investigation, we will now proceed to exhibit the two great opposite systems of psychology and the correlative methods of investigation.

The great problem which lies at the threshold of every inquiry into the phenomena of the human mind, and gives to every system of psychology its distinctive feature, in the point of view in which we are considering the subject (its connexion with logic and the method of investigation) is what is the origin of our ideas, "those simple notions into which our thoughts may be analysed, and which may be considered as the principles or elements of human knowledge?" There never have been, and never can be, more than two theories in regard to the solution of this problem.—One is the theory of innate ideas, or primitive cognitions which are not the product of the mind's own activity, but are its original furniture; the other, the theory, that all our ideas are founded ultimately in experience, and are acquired through sensation and consciousness. These two opposite psychological theories are the correlatives of the two opposite methods

of investigation, the a priori method, (which we have shown in the last chapter, to be nothing more than an application of the Aristotelian logic out of its proper sphere,) which makes all absolute verity to depend upon certain innate principles, or elements of knowledge, from which the mind starts and reasons out all science as legitimate deductions from them, in which the series of logical deductions will correspond with the series of facts subsisting in nature; and the inductive or Baconian method, which bases all knowledge upon experience, and considers principles as mere generalized facts obtained by the observation of particular phenomena. We will first treat of the theory of innate ideas and then show that it is the psychological correlative of the a priori method of investigation.

The theory of innate ideas has appeared under different phases; and more distinctly in the writings of Plato amongst the ancients, and Des Cartes amongst the moderns, than the writings of any other philosophers: Plato representing one phasis of this theory, and Des Cartes, the other. Plato held that there are in the soul certain innate ideas which form the basis of our conceptions and constitute the principles of our knowledge; and that these innate ideas were in the soul in a prior state of existence, and are now suggested to the mind, by individual objects presented to the senses. That the process of acquiring knowledge is mere suggested reminiscence; and that reminiscence is in proportion as the mind becomes acquainted with individual objects. For example: in the dialogue entitled "Phaedon," he asks, "Is it upon seeing equal trees, equal stones and several other things of that kind,

that we form the idea of equality, which is neither the trees nor the stones, but something abstracted from all these objects?" And he answers the question thus: "Before we begin to see, feel, or use any of our senses, we must have had the knowledge of this intellectual equality; else we could not be capable of comparing it with the sensible objects, and perceive that they have all a tendency towards it, but fall short of its perfection.

"That is a necessary consequence from the premises.

"But is it not certain that immediately after our birth, we saw, we heard, and made use of other senses?

"Very true.

"Then it follows that before that time, we had the knowledge of that equality?

"Without doubt.

"And of course, we were possessed of it before we were born?

"I think so.

"If we possessed it before we were born, then we knew things before we were born, and immediately after birth; knew not only what is great, what is small, what is equal, but all other things of that nature.

"For what we now advance of equality, is equally applicable to goodness, justness, sanctity, and in a word to all other things that have a real existence; so that we must of necessity have known all these things before we came into this world."

It is manifest from this extract, that Plato maintained, that all our abstract notions are in the mind when we come into this world, and are, of course, first in the order of acquisition; and that it is by the light of these notions, or ideas as he called them, that we com-

prehend what we observe in this world—that it is by the abstract innate idea of equality, that we judge of the instances of equality exhibited in experience; by the abstract innate idea of goodness, that we judge of the instances of goodness, and so of every other innate idea. Thus maintaining that man has in his mind, an innate standard of truth, with which he can compare every thing, and test its verity.

We will now exhibit the other phasis of this theory, as taught by Des Cartes. He held that the idea of the infinite, and all other ideas which are particularizations of it, are not acquired ideas, but are innate in the mind, having been communicated to it, or interwoven into its very being by the Creator, to be the foundation of all its acquired knowledge, and the guide of its future reasonings. Though he did not maintain that these ideas were always present in the mind: “When I say that any idea is born in us, or that it is naturally imprinted on our souls, I do not mean that it is always present in thought, for this would be contrary to fact; but only that we have in ourselves the faculty of reproducing it.”

It is evident that these doctrines of Plato and Des Cartes are substantially the same, and exhibit only different phases of the theory of innate ideas.

We will next show that the theory of innate ideas is the psychological correlative of the *a priori* method of investigation, and is the psychology assumed in that method; and that both Plato and Des Cartes actually adopted and used that method. Thus proving the proposition, both by philosophical analysis and historical fact.

' The least reflection will discover that the a priori method of investigation is the psychological correlative of the theory of innate ideas. For if all the principles or elements of our knowledge are an original furniture of the mind, and the most comprehensive principles stand first in the order of time in the mind—are those first developed to the intelligence, (as the theory of innate ideas teaches)—then the only method by which the mind can extend the sphere of its knowledge and build up this knowledge into science, is to combine these principles and deduce from them conclusions corresponding to the real particulars subsisting in nature; and the chronological and logical order of our knowledge is the same. And it is also clear that the a priori method of investigation assumes the theory of innate ideas or principles; because if there are no innate principles, or if, in other words, a reason could be given for every truth, no process of deduction (and the a priori method of investigation is the process of deduction or reasoning as we have shown in the last chapter) could ever have a beginning; for to make reasoning the process of discovering first principles, would be to go on to infinity; because, in every argument or process of reasoning, something must be assumed as true, from which our reasonings set out, and on which they ultimately depend. Where then, is the first starting point to be had, if it be not innate? It must be innate, or else it is furnished by induction: and if it is furnished by induction, the a priori method of investigation can have no existence: but is in reality, what it was in the hands of Aristotle, (who did not believe in innate principles, but, that they are ascertained by induction,

nothing more than reasoning from principles formed from a hasty or imperfect induction. It is evident then that the *a priori* method of investigation assumes the theory of innate ideas or principles—requires them for its starting points; and thus is developed the point of affiliation and doctrinal identity between them.

It is thus manifest from philosophical analysis of the theory of innate ideas, and of the *a priori* method of investigation, that they are psychological correlatives. We will next show, that they are correlatives in the history of philosophy also—that they are historically, as well as philosophically related—that Plato and Des Cartes adopted and used the *a priori* method of investigation, as well as maintained the doctrine of innate ideas.

In the *Phaedon*, the same treatise from which we extracted the remarks relative to innate ideas, and the one in which Plato gives, though in an incidental way, his peculiar psychology, we have also a delineation of Plato's method of investigation; though this is given in an incidental way too; for in investigating the subject of the treatise, the immortality of the soul, he had to use both his psychological theory and his method of investigation.

“Have seeing and hearing,” says Plato, “any thing of truth in them, and is their testimony faithful? Or are the poets in the right in saying that we neither see nor hear things truly? For if these two senses of seeing and hearing are not trustworthy, the others which are much weaker, will be far less such. Is it not by reasoning that the soul embraces truth? And does it not reason better than before, when it is not encumber-

ed by seeing and hearing, pain or pleasure? When, shut up within itself, it bids adieu to the body, and entertains as little correspondence with it as possible; and pursues the knowledge of things without touching them. Now the simplest and purest way of examining things, is to pursue every particular thought alone, without offering to support our meditations by seeing or hearing, or backing our reason by any other corporeal sense; by employing the naked thought without any mixture, and so endeavouring to trace the pure and general essence of things without the ministry of the eyes or ears: the soul being, if I may so speak, entirely disengaged from the whole mass of the body, which only encumbers the soul, and cramps it in the quest of wisdom and truth, as often as it is admitted to the least correspondence with it. If the essence of things be ever known, must it not be known in the manner above mentioned?" Plato exhibits his method of investigation still more clearly in the following remarks extracted from the same treatise:—"After I had wearied myself in examining all things, I thought it my duty to be cautious of avoiding what happens to those who contemplate an eclipse of the sun; for they lose the sight by it, unless they be careful to view its reflections in water or any other medium. A thought much like to that came into my head, and I feared I should lose the eyes of my mind, if I viewed objects with the eyes of my body, or employed any of my senses in endeavoring to know them. I thought I should have recourse to reason, and contemplate the truth of all things as reflected from it. It is possible the simile I use in explaining myself is not very just:

for I cannot affirm that he who beholds things in the glass of reason, sees them more by reflection and similitude than he who beholds them in their operations. However, the way I followed, was this; from that time forward I grounded all upon the reason that seemed the best, and took all for truth, that I found conformable to it, whether in effects or causes; and what was not conformable I rejected, as being false."

In these extracts we see that Plato held that "it is by reasoning that the soul embraces truth," and that the mind has the light of all truth within itself, and all the material within itself, upon which to exert the reasoning process; and that it does not stand in need of the ministry of the senses to gain any information—in a word, that all philosophy is built up by reasoning from or upon innate ideas; for that all the phenomena in nature are but copies of these innate ideas, and are known to the mind, only by comparing them with these innate ideas and observing their resemblance to them as their types and models.

That the *a priori* method of investigation was that used by Des Cartes also, is clearly manifested in his writings. He founded all knowledge upon a logical basis—upon demonstration; and considered that the object of philosophy is to deduce by reasoning from first causes, rules for the conduct of life and for the various arts. "It is clear," says he, "that we shall follow the best method in philosophy if from our knowledge of the deity himself, we endeavour to deduce an explication of all his works; that so we may acquire the most perfect kind of science, which is that of effects from their causes." In accordance with this

view of the method of investigation to be used in physical science, is his theory of the mind; for he maintains that the idea of God, which he makes the starting point in natural philosophy, is innate in the mind. Thus basing natural philosophy in psychology, and making it necessary to establish the foundation of psychological truths before certainty can be attained in physical truth. In order then to establish the foundation of psychological truth, he makes doubt the foundation of certainty and the starting point in human knowledge. "It is not to day," says he, "for the first time that I have perceived in myself that, from my earliest years, I have received a great many false opinions as true, and that what I have built upon principles so badly ascertained, can be only very doubtful and uncertain. And accordingly, I have decidedly judged that I must sincerely undertake some time in my life to rid myself of all the opinions I had before taken upon trust, and begin altogether anew from the foundation, if I would establish any thing firm and constant in science." Rejecting then, the knowledge of every thing, and plunging into absolute skepticism, he sets about to prove his own existence, as the first problem in knowledge; and does it by this argument:—"I think, therefore I exist."—Satisfied, that by this argument and the application of the principle contained in it, he had proved the reality of every thing revealed in consciousness—the reality of his own existence, his own thoughts, passions, &c., his next difficulty was to pass out of the sphere of consciousness, and prove the reality of things external to himself. In order to do this, he must find some fact revealed in consciousness, (whose phenomena he had

proved to be worthy of credit) as the starting point of the argument. This fact is the idea of a supremely perfect being, which he finds in his mind. He concluded, that as the mind of man is finite, it could not have produced by its own activity, this idea of the infinite; but that this idea must have some real object corresponding to it—which object is God—or in other words, that the idea of the absolute and infinite must have, from their very nature, a real object subsisting in time, corresponding to it. “If we carefully examine,” says he, “whether existence belongs to a being supremely powerful, and what sort of existence, we shall find ourselves able clearly and distinctly to know, first, at least, possible existence agrees with him, as well as with all other things of which we have in ourselves any distinct idea, even those which are composed of fictions of our own mind: and next, because, we cannot think existence is possible, without knowing at the same time—keeping in mind his infinite power—that he can exist by his own force, we conclude that he really exists, and that he has been from all eternity; for it is very evident from the light of nature, that that which exists by its own force, exists always; and thus we shall know that necessary existence is contained in the idea of a supremely powerful being, not by a fiction of the understanding, but because it belongs to the true and immutable nature of such a being to exist; and it will be easy for us to know that it is impossible for this supremely powerful being not to have in himself all other perfections that are contained in the idea of God, in such sort, that, of their own proper nature and without any fiction of the under-

standing, they are always joined together and exist in God." By this argument Des Cartes satisfied himself, that the existence of God is proved from the existence of the idea of such a being in the mind; and that thus the existence of an external reality is proved—that the boundary of consciousness is passed, and two orders of ideas are established: viz: himself and the external reality; the proof of himself, resting upon his methodical doubt, "I think, therefore I exist," and the proof of the existence of the external reality resting upon an idea corresponding to it in his mind.—Returning again into consciousness, he finds there, the idea of thought, and the idea of extension, under one or the other of which, he maintained, are embraced all other ideas; and as these ideas are radically distinct, he concluded that the substances of which they are respectively the attributes are distinct also. The world, then, is composed of two classes of beings, spirit and matter, they being the substance of which thought and extension are the essential attributes. But the question occurs to him, how does he know the reality of matter? And he solved it thus: Because he has a natural impulse to believe in the objects of his sensations, and God, whose existence he has proved, being perfect in his nature, has guaranteed the truth of their testimony. Here then, is the starting point in natural philosophy—God and matter. And as matter and motion are, to his apprehension, the only phenomena in the physical world, in accordance with his doctrine just now proved, that the most perfect kind of science is that of effects deduced from their causes, he says, "give me matter and motion and I will explain the

universe;" and he accordingly explains all material phenomena by the application of mechanics based upon geometry, making God the prime mover of the universe, and the cause of all material phenomena.

In this analysis of the Cartesian philosophy, in which we have endeavored to present the fundamental conceptions of that philosophy in their true relations and logical order, without any reference to the order in which they stand in the writings of Des Cartes, it is evident that the method is *a priori*—that it begins with an argument at all its salient points—that psychology is made the foundation of every truth, and that the very first truth in this is established by an argument. |

And what a miserable tissue of sophistry is the whole pretended argument; resting, as it and every other *a priori* argument must, upon mere assumptions mistaken for innate ideas or principles. The theory of innate ideas and the *a priori* method of investigation are correlative systems of error. Each is necessary to support the other. And they have been the great fountains from which have flowed copious streams of error into every department of human knowledge. For psychology is the foundation of all human knowledge—is the centre around which every science revolves—is the light in which all other sciences are seen; and in proportion as this light is true or false, is the correctness of all our opinions upon the great subjects of human thought.

Having now established the point, both by philosophical analysis and historical fact, that the theory of innate ideas and the *a priori* method of investigation have a logical affinity and a doctrinal identity, and

are consequently psychological correlatives, we will next treat of the psychological theory, that all our ideas are founded in experience and are acquired through sensation and consciousness, and show that it is the psychological correlative of the Baconian method of investigation; and in doing this, we shall trace that method to the very first impressions made upon the senses, and evolve the principles which govern every step of the process.

The most profound and comprehensive remark ever uttered by man in the whole history of philosophy, is the first aphorism of the *Novum Organon*—"Man as the servant and interpreter of nature, does and understands as much as his observations on the order of nature, either with regard to things or the mind, permit him, and neither knows nor is capable of more." This proposition throws more light over the mysteries of nature than every thing that had been written before. It proclaims the true system of both mental and natural philosophy, and defines the limits and the modes of both the knowledge and the power of man. All the rest of the *Novum Organon* does nothing more than develop the great truth contained in this proposition. In order to exhibit its full import, we will divide it into the two propositions asserting two kindred but distinct truths, of which it is composed. It speaks of man as the *interpreter* of nature, and also as the *servant* of nature. Let us keep these two truths separate; and consider the proposition, first leaving out what is said of man, as the *servant* of nature; and then leaving out what is said of him, as the *interpreter* of nature.—Man, as the *interpreter* of nature, understands as much

as his observations on the order of nature, either with regard to things or the mind, permit him, and does not know more. Here, it is declared, that the philosopher is a mere interpreter of nature, and that his knowledge is acquired by the observation of the order of nature of both things and the mind, and that he does not know more. This proposition then, while it proclaims that both natural and mental philosophy are confined to the observation of the order of nature, the antecedence and sequence of its phenomena, just as distinctly proclaims the theory of mind, *that all our knowledge is founded on experience*—that we understand as much as our observations on the order of nature, either with regard to things or the mind, permit, but do not know more. But this exposition does not exhaust the fullness of the proposition; for it speaks of man as the *servant* as well as the *interpreter* of nature, and thus points out the mode and the limit of his *power* as well as the mode and limit of his *knowledge*. The mode of his power consists in acting as the *servant* and not as the *master* of nature, and the mode of his knowledge consists in his *interpreting* and not *anticipating* nature.

And here is at once shown the connexion between science and art, and the nature of both of them. Science consists in finding out the laws of nature; and art, or the power of man, consists in obeying these laws—in serving nature. Here then is evolved, out of the first sentence of the *Novum Organon*, the psychology or theory of mind assumed in the Baconian method of investigation, and which the whole scope and drift of that method make manifest; *that all our knowledge is founded in experience*. And thus is at once exhibited

the point of affiliation and doctrinal identity between the Baconian method of investigation and its correlative system of psychology.

But we are not left to infer the psychology of Bacon merely from what he has tacitly assumed; for though the chief object of his writings was to give directions in physical inquiries, and to divert the minds of men from metaphysical speculations about the essence, the eternal reasons and primary causes of things, and thus, to prevent them from admitting objections against plain experience, founded upon metaphysical notions—as Aristotle and the ancient philosophers had done, according to whose opinions physical science is the application of metaphysical notions to the explanation of the general phenomena of the universe—yet in his *Advancement of Learning*, he has given a clear view of his theory of mind, and shows that he had a distinct apprehension of the great outline of the psychology which has since been developed by Locke and Reid. “The knowledge of man,” says he, “is as the waters, some descending from above, and some springing from beneath; the one informed by the light of nature, the other inspired by divine revelation. The light of nature consisteth in the notions of the mind, and the reports of the senses. So then according to these two differing illuminations or originals, knowledge is first of all divided into divinity and philosophy. Bacon is here speaking of the origin of all human knowledge.—He says one kind is derived from revelation, and the other from the light of nature; and that the “light of nature consists of the notions of the mind and the reports of the senses.” By the notions of the mind, the

whole scope of his writings, their very drift and aim, show that he means those notions or ideas which are developed in consciousness, and not innate ideas; and it is plain, that by the reports of the senses, he means the ideas acquired through sensation: though we do not assert that Bacon had apprehended with scientific accuracy those two different sources of knowledge, but merely that he had a general knowledge of them. It is manifest then, that though Bacon laid great stress upon the knowledge derived through the senses, he did not think that sensation is the only source of knowledge, as some of the philosophers of the continent of Europe have ignorantly alleged, but that like Locke and Reid he admitted consciousness to be a distinct and equally important source of knowledge.

We will now proceed to show that the system of psychology, maintained by Bacon, is identical with that of Locke and Reid, indicating as we proceed the points of affiliation and doctrinal identity between their system and the Baconian method of investigation, and thus demonstrate that their system is assumed in that method.

In developing the doctrines of Locke and Reid, we shall not so much follow in their tracks, as pursue the train of our own thoughts: neither shall we stop short at the limits to which they have developed their doctrines, but will give to them more scientific completeness than they possess as developed by themselves, by filling up, with logical concatenations, the chasms which lie between the doctrines and their correlative method of investigation, and by modifying any doctrine which they have expressed with too much lati-

tude or expressed imperfectly, so as to make them harmonize in a system.

It was the signal glory of Locke to establish the true theory of the origin of our ideas; and thus to solve the problem which lies at the very threshold of psychology. The theory of innate ideas which we have already exhibited, had prevailed generally throughout the whole history of philosophy. This theory Locke overthrew, just as Bacon had done its correlative method of investigation, and showed how all our ideas originate.* In commencing his strictures upon the theory of innate ideas he says: "It is an established opinion amongst some men, that there are in the understanding certain innate principles, some primary notions, *koinai ennoiai*, characters as it were, stamped upon the mind of man, which the soul receives in its very first being, and brings into the world with it."—

*We do not mean that Locke has shown correctly in every instance, how our notions have originated: but that he has shown, that they all are acquired through experience and are not an original furniture of the mind. Can any one doubt, for example, how the notions of colours and sounds are acquired, when they consider that persons who have not the senses of sight and hearing cannot by any means whatever acquire these notions? They must see at once, that these notions are acquired through the senses of sight and hearing. Locke has shown that all other notions of the external world are acquired in a similar way; though his explanation of some instances may be erroneous. Neither does it detract from the truth of Locke's indication of the sources of these notions, that he has not chosen the most appropriate terms to express them, viz. sensation and reflection. The last is the term which has been mostly considered erroneous. Consciousness has been, and we concur in the opinion, considered as indicating more exactly the source of one class of our ideas. But this precision, though important in scientific accuracy; does not detract from the truth of the solution which Locke has given of the problem of the origin of our ideas. It is a pitiful criticism upon a great philosophical discovery, to dwell upon a mere inaccuracy in definition; though certainly, the inaccuracy ought to be pointed out.

He then selects the following propositions as "having the most allowed title to innate" principles, namely:—*"whatever is, is; and it is impossible for the same thing to be and not to be."* He then argues that these principles are not so much as known to the greater part of mankind, and are therefore not innate. "For, first, it is evident, that all children and idiots have not the least apprehension or thought of them; and the want of that is enough to destroy that universal assent, which must needs be the necessary concomitant of all innate truths: it seeming to me near a contradiction to say that there are truths imprinted on the soul which it perceives not, understands not; imprinting, if it signify anything, being nothing else but the making certain truths to be perceived. For to imprint anything on the mind, without the mind's perceiving it, seems to me hardly intelligible. If, therefore, children and idiots have souls, have minds with those impressions upon them, they must unavoidably perceive them, and necessarily know and assent to these truths; which, since they do not, it is evident that there are no such impressions. No proposition can be said to be in the mind, which it never yet knew, which it was never yet conscious of." To the argument which had been frequently used by the advocates of the doctrine of innate ideas, that men know these innate principles, as soon as they come to the use of reason, he replies: "But how can those men think the use of reason necessary, to discover principles that are supposed innate, when reason, (if we may believe them,) is nothing else but the faculty of deducing unknown truths from principles or propositions, that are already known! We may as well think the

use of reason necessary to make our eyes discover visible objects, or that there should be need of reason, or the exercise thereof, to make the understanding see what is originally engraven on it, and cannot be in the understanding before it is perceived by it." After showing that the fact that these propositions are assented to, as soon as proposed and understood, does not prove them innate, and after deducing a variety of other arguments against the doctrine of innate ideas or principles, he says: "I say next that these two general propositions are not the truths that first possess the mind of children, nor are antecedent to all acquired and adventitious notions; which if they were innate, they must needs be. The child certainly knows that the nurse that feeds it, is neither the cat it plays with, nor the blackmore it is afraid of; that the wormseed or mustard it refuses, is not the apple or sugar it cries for; this it is certainly and undoubtedly assured of; but will any one say, it is by virtue of this principle, *that it is impossible for the same thing to be, and not to be*, that it so firmly assents to these and other parts of its knowledge? Or that the child has any notion or apprehension of that proposition, at any age, wherein yet it is plain, it knows a great many other truths?" By this train of reasoning, Locke has utterly overthrown the theory of innate ideas. This he does in the first book of his work on the human understanding. And in the second book, he shows the true theory of the origin of ideas or of human knowledge.

"Let us," says he, "then suppose the mind to be as we say white paper, void of all characters, without any ideas, how comes it to be furnished? Where comes

it by that vast store which the busy and boundless fancy of man has painted on it with almost endless variety? Where has it all the materials of reason and knowledge? To this I answer, in one word, from experience; in that all our knowledge is founded, and from that it ultimately derives itself. Our observation employed either about external objects, or about the internal operations of our minds, perceived and reflected upon by ourselves, is that which supplies our understanding with materials of thinking. These two are the fountains of knowledge, from whence all the ideas we have or naturally can have, do spring." Such is Locke's theory of the origin of human knowledge—it is all founded on experience.

Here we have arrived at the point of affiliation and doctrinal identity, between the psychology of Locke, and the methods of investigation of Bacon, namely, *that all our knowledge is founded on experience*. This is the theory of mind with all its correlative doctrines, that is assumed in the Baconian method of investigation. This theory of mind teaches that we begin with the knowledge of particulars and proceed to the knowledge of generals, as is taught throughout Locke's writings; and that nothing but particulars producing particular effects have any real existence; and that generals are nothing more than the conceptions of the mind formed from the contemplation of particulars, and are not real architypical existences as Plato thought, by which the nature of particulars are comprehended.

Though Locke had, as we have shown, solved the great fundamental problem of psychology, and thus laid the foundation of mental philosophy, yet he had

assumed in that solution a most erroneous theory in regard to the manner in which the mind perceives both external objects and itself. He assumed the ideal theory, that ideas or images of things in the mind, and not things themselves are the only objects of thought, which had prevailed universally from the earliest history of philosophy. Bishop Berkeley, after the time of Locke, showed that this doctrine led irresistibly to the denial of the existence of the material world; because if we perceive nothing but ideas, there is no ground for inferring that any material world exists; as there is nothing in ideas to indicate such a fact. But Berkeley held that the mind does perceive itself immediately, and therefore concluded that the spiritual world has a real existence. Hume, who was instigated by a passion to overthrow all belief, philosophical as well as religious, in order that he might engulf all knowledge in absolute skepticism, had the acumen to pierce through the inconsistency of Berkeley's doctrines in regard to the spiritual world, and his doctrines in regard to the material world, and showed that Berkeley had no more right to hold that the mind perceived itself immediately, than he had to hold that it perceived the material world immediately; and as Hume held the ideal theory to be true, he turned the arguments which Berkeley had used against the existence of the material world, against the existence of the spiritual, and showed that a denial of its existence is also a legitimate deduction from the ideal theory.— So that a Christian Bishop and an infidel philosopher had, by their joint labours, shown that a doctrine in which they both believed, and which had prevailed uni-

versally in this philosophical world for several thousand years, proved beyond a doubt that the universe of both matter and mind is all an illusion; and that nothing exists but certain ideas governed by laws of constant succession.

Thus had skepticism, by attacking English philosophy on a point where it had inadvertently based itself upon error, utterly overthrown it. But in the order of Providence, a champion for the truth appeared in Reid, who, imbued with the true spirit of English philosophy, had the sagacity to perceive that the conclusions of Berkeley and Hume, are a *reductio ad absurdum* of the ideal theory, and at once set about to examine it; for up to this time, he had believed in its truth. He showed that when applied to the sense of sight, there is something plausible in the theory, that the mind perceives the images of things and not things themselves, but that when applied to the other senses it is perfectly absurd. "As to objects of sight," says he, "I understand what is meant by an image of the figure in the brain: but how shall we conceive an image of their colour, where there is absolute darkness?—And as to all other objects of sense, except figure and colour, I am unable to conceive what is meant by an image of them. Let any man say what he means by an image of heat and cold, an image of hardness or softness, and an image of sound or smell, or taste. The word *image*, when applied to these objects of sense has absolutely no meaning." By this and many other modes of reasoning, Reid showed beyond a doubt that this theory is a mere hypothesis feigned in a vain endeavour to fathom the mystery of the union between

body and soul, between mind and matter. Yet he did not attempt to substitute for it any theory of his own, of the manner in which the mind perceives external things; as he considered this beyond the sphere of philosophy. "How a sensation," says he, "should instantly make us conceive and believe the existence of an external thing altogether unlike to it, I do not pretend to know; and when I say that the one suggests the other, I mean not to explain the manner of their connexion, but to express a fact, which every one may be conscious of; namely, that by a law of our nature, such a conception and belief constantly and immediately follow the sensation." Though Reid did not attempt to show the manner in which the mind perceives external objects, for this is impossible; yet he has solved the second great problem in psychology as Locke has solved the first. This second problem is, upon what does our knowledge of the existence of the material and spiritual worlds rest? How do I know that these are not illusions, as Hume and Berkeley have taught? We have shown how Des Cartes has answered these questions—that he based their solutions upon argument—upon demonstration: which is the basis upon which the theory of innate ideas must forever found it; as that theory knows no belief independent of or anterior to demonstration. And though Hume (for we will now take leave of Berkeley) adopted the theory of Locke, that all our knowledge is founded ultimately upon experience, yet he agreed with Des Cartes, that all belief is founded upon demonstration, and thus formed an inconsistent mongrel creed, which is the hallucination of the skeptic, who seeing in his own

mind contradictory opinions, concludes that this is the character of truth. Reid, therefore, taking as the foundation of his inquiry, the truth of Locke's doctrine* (though it must be admitted that Reid does not always

*In consequence of the skeptical conclusions which Hume deduced from the ideal theory, Reid was led to overlook in a great measure the importance of the service rendered by Locke to mental philosophy, because Locke had assumed that theory in his explication of mental phenomena. He overlooked the fact that the great aim of Locke was to solve the problem of the origin of human knowledge, and that in the solution of this problem, he had, more by inadvertence, than by deliberate consideration, assumed the ideal theory, and that his solution is correct whether the ideal theory be true or not. In fact all that Reid has himself done, proves that Locke's theory of the origin of human knowledge is true. For, while Reid is refuting the ideal theory, he incidentally establishes the fact that there are no innate ideas or notions, but that they are acquired by experience—suggested by sensation and consciousness. It is true that he says frequently in his writings that there are other ideas than those of sensation and reflection: but then, we must observe what he means by this. He does not lay it down as an abstract proposition, but confines its meaning to the ideal theory, and thus limits the meaning of the proposition. He is refuting the ideal theory, and uses this proposition as a touchstone to refute that theory. For example, he says, "The conception of a mind, is neither an idea of sensation nor of reflection; for it is neither like any of our sensations, nor like anything we are conscious of." Now, in this sentence, when it is taken in connexion with Reid's argument, properly, the first proposition—"The conception of a mind is neither an idea of sensation nor of reflection," is the conclusion, and the last proposition—"For it is neither like any of our sensations nor like anything we are conscious of" is the proof of the premises from which the first is deduced. His object is to refute the theory that our ideas are mere images of something in sensation or consciousness; and in order to do this, he shows that the idea of mind is not an image of anything either in sensation or consciousness: but that it is a notion which is suggested to us by our sensations, just as the idea of hardness is not like that quality in matter, yet it is suggested to us by feeling a body which possesses that quality. But still it is evident, that Reid supposed that he himself had solved the great problem in psychology—that he supposed the problem, whether the mind perceives things or the images of things, is a greater problem than that of the origin of our ideas, and he has accordingly subordinated this last, to the other, and classed Locke and Des Cartes, as belonging to the same school of mental philosophy. And even Dugald Stewart, with all his sys-

appear to comprehend fully his relation to Locke in the development of English psychology,) that all our knowledge is founded ultimately in experience, by a most profound and accurate analysis of mental phenomena, proved that there is in the mind an element of belief independent of demonstration, and evolved the great fundamental laws of human belief; and thus laid open to the eye of philosophy what it had so long sighed after, and toiled for through so many thousand years—the solid foundations of absolute verity, and raised up English philosophy from the abyss into which Hume had so coldly and stealthily piloted her. As Locke had shown that the elements of knowledge are not innate, and that neither are they acquired by reasoning, but through sensation and consciousness, Reid, true to these principles of him whom God in his providence had made his forerunner and master, though as we have already said, he did not seem to comprehend the fact, strove, and successfully, to discover the psychological laws which govern human belief in regard to the knowledge acquired through these original sources.—The law of belief which governs the knowledge ac-

tematic and critical cast of mind, did not discern the precise relation which Reid held to Locke in the development of mental philosophy: but thought that Reid had originated a new mental philosophy. And this view of the subject, has led Stewart to express in his writings, opinions of Locke somewhat contradictory; thus showing that his mind was rather confused on the subject. All these errors of Stewart resulted from his not viewing psychology from logic, as we have done. By looking at it from logic, it is at once discovered, that *what is the origin of human knowledge*, is the fundamental problem, and that the solution of this problem is the first step in psychology, and that all philosophers must be classed under one or the other of the two solutions which have been given of it, and not under the solutions of a minor problem, such as *whether the mind perceives images or things themselves*.

quired through sensation, he showed to be, *that such is the constitution of human nature, that man cannot but believe in the reality of whatever is clearly attested by the senses.* And he showed that the law of belief relative to the phenomena of consciousness, is, *that such is the constitution of human nature, that man cannot but believe in the reality of whatever is clearly attested by consciousness.* He showed these to be ultimate facts in psychology, incapable of resolution into simpler elements. That human intelligence cannot penetrate deeper into the mysteries of faith. That here man finds laws of imperative command to believe, and that man cannot but believe. These laws are constituent elements of the mind. The mind must be annihilated before these laws can cease to operate; for the sane mind obeys by necessity. Disobedience is impossible except in insanity, and even then, disobedience is only partial. Another fundamental law of belief Reid showed to be, *that man is so constituted that he cannot but believe in whatever he distinctly remembers.* This law is auxiliary to the others; for without this law, the other two would be nearly useless. But the great fundamental law of belief, upon whose broad foundations, all science immediately rests, the law of inductive belief, which is the only guide to our knowledge in the darkness of the future, the law by which the mind infers the future from the past—that like causes will produce like effects—still remained undiscovered; and the dauntless skepticism of Hume stood in the very vestibule of the temple of philosophy, boldly declaring that man cannot know any thing but what he has actually seen or been conscious of; and that even this

knowledge must be verified by reasoning, as all certainty rests upon demonstration. Reid therefore showed by a most rigid analysis of mental phenomena, *that man is so constituted that he cannot but believe that like causes will produce like effects; and that the future will be like the past:* and thus discovered the great fundamental law of belief which governs the mental determination in the inductive process; and thereby connected the whole mental theory of Locke and himself with the Baconian method of investigation; for this is the point of contact between psychology and the method of investigation, as we showed in the beginning of this chapter. Reid has therefore solved the second great problem in psychology; and showed that, the Baconian method of investigation which maintains that induction, and not reasoning, is the paramount process in the acquisition of knowledge, and that perception, and consciousness, and induction, and not reasoning; are the ultimate foundations of verity, has assumed a correct theory of the human mind.

According to English psychology then, the mind of man is developed from without inwards—sensation being exerted before consciousness, consciousness before induction, and induction before reasoning. As Reid showed that in the various exertions of thought there is not in the mind, any object distinct from the mind itself, but that what philosophers had called ideas or images of things in the mind, are nothing but the thoughts or acts of the mind, the doctrine of English psychology that all our knowledge is founded ultimately upon experience, means that the powers of the mind are dormant until wakened into consciousness by some

impression made upon the senses, and that as soon as this is done, the knowledge of two facts is acquired at once, that of the existence of the object of sensation, and of the person's own existence as a sentient being; and thus two orders of ideas or notions are established, the mind and that which is not the mind; and that the original elements of all our knowledge are suggested to the mind by some such occasions—that certain impressions on our organs of sense are necessary to suggest to the mind a knowledge of external things, and to awaken it to a consciousness of its own existence, and to give rise to the exercise of its various faculties; and that after consciousness is thus awakened, it becomes a source of ideas or notions distinct from those of sensation—that the ideas of colours, sounds, hardness, extension, and all the qualities and modes of matter are received through the senses; and that the ideas of memory, volition, imagination, anger, love and all the acts and affections of mind are suggested in consciousness; and that it is from the materials thus furnished in the way of experience, that the mind by combining, abstracting, generalising, and so forth, builds up all knowledge.

This mere historical order of the development of the mind shows that particulars are known before generals; and that consequently, perception is exercised before induction, and induction, before reasoning; because perception informs us of particulars, induction of generals, and reasoning sets out from generals, and is therefore dependent on induction for the truth of its premises; and consequently there cannot be an a priori method of investigation.

English psychology, then, has discovered the origin of human knowledge, and the fundamental laws of belief, which govern the two original sources of this knowledge, sensation and consciousness, and also the fundamental law of belief which governs the inductive inference of a general conclusion from particular instances exhibited in sensation and consciousness, and shown that these fundamental laws of belief are elements of the mind itself; and consequently ultimate facts in psychology; and thus, by strict analysis of phenomena, laid open the whole mental process of acquiring knowledge, and established the basis of absolute verity.

We have then in accordance with the proposition of Bacon quoted at the beginning of this chapter, a sure foundation to tread on through the whole path of investigation, from the very first perceptions of the senses, to the highest generalizations of induction—having the fundamental laws of belief developed by Reid, to stand on safely and confidently in admitting the information of the senses, the information of consciousness, the information of memory and the conclusions of inductive inference.

But let us return for a moment to the ground over which we have passed, and see whether we cannot throw more light on the theory of mind that all our knowledge is founded on experience; or rather, let us look at that theory in another light.

Lord Bacon, as we have already shown, teaches that the knowledge of man is derived from two sources, the light of nature, and divine revelation: "The knowledge of man is as the waters, some descending from

above, and some springing from beneath; the one informed by the light of nature, the other inspired by divine revelation." As we have examined psychology in the light of nature, we will now inquire whether any further light is thrown upon it by divine revelation.

It is distinctly taught in the book of Genesis, that man originally received the truth by immediate revelation from God; and that he conversed with superior intelligences, messengers from Heaven; and thus, by a supernatural tuition, was instructed in knowledge which he could not have acquired by his unaided intellect. Now, if such communications of knowledge were necessary to the education of man, in the earliest period of his history, when he had just drawn his intellectual life from its first source, and possessed all the mental energy, which it may be conjectured he received when his intellectual endowments were first bestowed upon him by the hands of the Creator, is it not manifest, that the knowledge of man is not innate in its elements in the mind, and is not a mere development of human reason? For, at the creation of man, his physical necessities, as well as his mental enjoyments, required more than at any time since, that knowledge should be innate in his mind. But we find that man was treated as an ignorant being, as in his infancy, and was instructed by superior intelligences. And this same supernatural instruction in some form was continued by prophets and inspired men, until it was completed in the gospel of Jesus."

Has not God, then, treated man on the assumption that knowledge is not a mere development of human

reason exercised upon elements or primordial ideas innate in the mind? It may, perhaps, be argued that it requires time to develop knowledge from these primordial notions, and that therefore man was necessarily instructed in the earliest period of his history. But we judge that this has no force. Because the faculties of the first man were created mature, and his mental eye, undimmed by sin, we may conjecture, possessed an extraordinary degree of intuition, seeing with the greatest clearness whatever can be the object of intellectual perception; and therefore he could have developed his innate ideas into sufficient knowledge, if this had been the mode of acquiring knowledge, which the Creator had established for him. But even if the first man had received his knowledge by an instantaneous endowment, it would not have impugned our theory; because his intellectual faculties and his physical nature were created mature, and not left to the slow process of natural growth, and therefore such an endowment would have been merely in keeping with the extraordinary dealings of the Creator, above the course of nature. But it is certain that the first man and all his posterity were treated as beings incapable of acquiring sufficient knowledge without supernatural instruction; and the fact that their faculties were mature and yet their knowledge deficient, forcibly corroborates our position.

But the gospel makes our conclusion still more clear. The apostle Paul says: "I had not known sin, but by the law; for I had not known lust, except the law had said thou shalt not covet." What is this but asserting that there is nothing in the reason of man which could

have taught him sin? The law was a schoolmaster, to bring man to the gospel; and the gospel has revealed still more clearly the truth to man.

So far from the most essential knowledge being innate in man, it has been necessary in all periods of the world down to the present time, that man should be instructed by others of superior knowledge: and thus in modern times, a general providence is performing for man what God did in the earlier periods of the world by direct instrumentality. No nation has ever risen from barbarism in the scale of civilization by its unaided efforts. All have borrowed learning from those which have preceded them. Every development of humanity has given its light to those which have succeeded it. The Greeks did all which philosophy, or the unaided reason of man, can do towards the solution of the mysteries of humanity. But after all their intellectual achievements, it has been declared by divine revelation, "that man by wisdom knew not God;" and that their philosophy was wisdom falsely so called. But who can tell how much of Greek philosophy was a traditionary reflection of divine revelations? To deny, that much of it was, would be to run counter to the whole current of history, and to falsify the best established inductions of philosophy. All the philosophy of every period of the world has been enlightened by divine revelations; and by a strange reflex action, the light thrown back from philosophy upon revelation, often enables man to see the truths of revelation the more clearly. Philosophy becomes a mirror, in which we can see the image of revelation, reflected by its own light, in brighter lustre often, than

when we look at it immediately: but still it is the light of revelation all the while revealing the truth to us. In order to apply to individual man, what is here said of nations, it is merely necessary to reflect, that what is developed in nations, is also developed in the individual man: as a nation is but an aggregate of individuals.

We think, that our theory is further confirmed by the fact that the same sort of errors are manifest in the theology of nations which adopt the theory of innate ideas, as in their philosophy. Those nations which adopt this theory, and that all philosophy is nothing more than a development of human reason, have fallen into error by making revelation subordinate to philosophy—have modified the doctrines of revelation by the teachings of reason. Whereas, those nations which have adopted the opposite doctrine, that all knowledge is acquired by experience, either from the light of nature, or the light of revelation, have submitted to the teachings of both these lights—have become the mere interpreters of both nature and revelation—have admitted that the mind has no innate intellectual conceptions, or innate moral principles, by which to try the truth of the doctrines of revelation: but have admitted as the truth whatever a fair interpretation shows to be the doctrines revealed. The English, who adopt the doctrine, that all knowledge is founded in experience, have the largest mass of orthodox theology—theology conforming to a strict interpretation of the scriptures—of any nation in Christendom, while the Germans and French, who maintain, to a great extent, under some modification or other, the theory of innate

ideas, and exalt the ability of human reason, have reasoned away the obvious and philological meaning of the scriptures, in explaining their doctrines by certain abstract intellectual conceptions; and thus substituted a philosophical theology in the place of divine revelation, thereby declaring themselves wise above what is written.

We have now, in the two chapters of the second part of this discourse, exhibited an outline of the method of investigation, the process, the starting points, and the foundations, of the English philosophy, and contrasted them with those of the opposite system of philosophy, in order, that our readers might see, in comparison with the other, the solid foundations of that philosophy which has formed the opinions and the mental habits of the Anglo-Saxon race; and also, that they might have a touchstone of philosophical criticism, by which to test the validity of the reigning speculations of the day. For such is the increasing taste, both in this country and England, for the transcendental speculations of the German and French philosophy, that unless something is done, to check its progress, our old English philosophy will be cut loose from its strong anchor of common sense, and be driven off from its ancient moorings, to be dashed and tossed, by every wind of speculation, upon the boundless ocean of skepticism.

PART THE THIRD.

NATURAL THEOLOGY.

ITS PLACE AMONGST THE SCIENCES; AND ITS EVIDENCE.

The second part of this discourse, not only teaches the true method of investigation, but it may also be employed as a touchstone of philosophical criticism, to direct and enlighten the judgement in philosophy, just as rhetoric is a touchstone of literary criticism, to direct and refine the taste in literature. We will therefore, in this third part of the discourse apply the logical and psychological principles developed in the second part, by way of philosophical criticism, to Lord Brougham's Discourse of Natural Theology, and Hume's Essay on a Special Providence and a Future Fate, in order to show, how the errors of both these productions may be detected by the application of these principles; and also to make it manifest, that Natural Theology is a branch of the Baconian or inductive philosophy, and is supported by every principle of that philosophy, both logical and psychological: and thus, while we show the importance of the second part of this discourse as a touchstone of philosophical criticism, at the same time put to rest the ignorant assertion which we noticed in the first part of this discourse, that the Baconian philosophy leads to atheism.

With a view then to these objects, let us enquire what is the proper place of Natural Theology amongst the sciences, and what is the nature of the evidence upon which it rests!

Natural theology, is a branch of the inductive philosophy, and is founded upon the same sort of evidence, as that upon which natural philosophy and metaphysics are based. Lord Brougham in his "Discourse of Natural Theology," enunciates this proposition; and the whole design of his work is to establish it: but he has in the very out-set, most strangely assumed a false notion in regard to the nature of the evidences on which natural theology rests; and then endeavours by a laboured analysis, to show, that the evidences on which natural philosophy and metaphysics are based, are of the same character. He assumes that all the evidence upon which natural theology rests is deductive; and then endeavours to show, that all the evidence is deductive also, on which natural philosophy and metaphysics repose. Nothing can be more erroneous than these notions; and more flimsy sophistry was never employed to sustain error, than the noble author has pressed into his service. A false notion in logic which runs through the whole discourse, led him into these errors. This false notion in logic, is the confounding the fundamental laws of belief with reasoning; and confounding reasoning with simple comparison. Indeed, the author's logical doctrines go the full length of rejecting altogether perception and consciousness, and substituting the process of reasoning in their stead. On pages 18—21, he remarks:—"The careless inquirer into physical truth would certainly think he had seiz-

ed on a sound principle of classification, if he should divide the objects with which philosophy, natural and mental, is conversant, into two classes—those objects of which we know the existence by our senses, or our consciousness; that is, external objects which we see, touch, taste, and smell, internal ideas which we conceive or remember, or emotion which we feel—and those objects of which we only know the existence by a process of reasoning, founded upon something originally presented by the senses or by consciousness.”—The author then goes on, with a tissue of the most egregious sophistry, to refute the truth of this classification; and after citing a great many instances of truths, which are generally supposed to be ascertained by perception and consciousness, and not by reasoning, he asks: “But can we say that there is no process of reasoning even in the simplest case which we have supposed our reasoner to put—the existence of the three kingdoms, of nature, of the heavenly bodies, of the mind? It is certain that there is in every one of these cases a process of reasoning.” Now, is it not making wild work with mental philosophy, to assert that the existence of external objects, and even the existence of the mind is ascertained by processes of reasoning?—Why, what can the author mean by reasoning? Let him answer for himself! On page 20, in arguing this very point, he says—“The very idea of diversity implies reasoning, for it is the result of a comparison.”—Here, he evidently confounds reasoning with simple comparison; as will appear by throwing the argument into a syllogism; because the major premis will be—“Whatever is the result of a comparison, implies rea-

soning;" which is virtually asserting that comparing is reasoning.* Whereas, reasoning is a comparing of two terms with a third term, and drawing a conclusion from the comparison, that the two terms agree with each other, from the fact that they agree with the same third term, or that they disagree with each other, from the fact that one of them agrees, and the other disagrees with the same third term. So then, in every act of reasoning there are three acts of comparison, two simple and one inferential; and therefore to say that simple comparison is reasoning, is grossly erroneous.—Now, what is the process of reasoning, by which the existence of such an object of sense as a tree, is ascertained? I should like to see the argument in the form of a syllogism! But the notion that the existence of the mind is ascertained by reasoning and not by consciousness, is the grossest absurdity in the whole discourse. Reasoning is the deducing something unknown, from something known. Now, what is it, from which the existence of the mind is deduced, which was known before the existence of the mind was known? What is the major premis of such a conclusion? And if every object of sense and of consciousness is ascertained by reasoning, is deduced from something previously known—how did we acquire the knowledge from which it is deduced? Let this question be put in infinitum; and what answer can be given to it, on Lord Brougham's theory? There must be a

*NOTE,—As it would embarrass us by the number of notes, to notice every application of the logical and psychological principles in this criticism, we will merely direct attention to this instance, and leave the other instances to the reader's own observation. See page 54.

beginning some where; and this rebuts the presumption that all our knowledge is ascertained by reasoning. The truth is, Lord Brougham's discourse is replete with logical blunders; and he contradicts himself over and over again, and evinces the greatest looseness and confusion of opinion in regard to the general doctrines of logic. For example:—on page 39, he says—"The consciousness of existence, the perpetual sense that we are thinking, and that we are performing the operation quite independently of all material objects, proves to us the existence of a being different from our bodies, with a degree of evidence higher than any we can have for the existence of those bodies themselves, or of any other part of the material world." How can this sentence be reconciled with the doctrine before advanced, that the existence of our mind is ascertained by reasoning? Is it not emphatically asserted here, that its existence is ascertained by consciousness, "The perpetual sense that we are thinking?" And on page 41, in discoursing of the faculties of the mind, he says—"Among the most remarkable of these, is the power of reasoning, or first comparing ideas and drawing conclusions from the comparison, and then comparing together these conclusions or judgements." Is not this definition of reasoning, altogether inconsistent with the hypothesis that all comparison is reasoning? which is assumed as the basis of all the logical doctrines advanced in the first section of the discourse; though we are sure it was assumed inadvertently: yet without this assumption, the doctrines have not even the semblance of plausibility, and even with it they are altogether untenable; because it would then be necessary to as-

sume, that in every act of perception and consciousness, there is comparison; which is preposterous. There are many other logical errors in the discourse, such as confounding induction with reasoning: but our limits will not permit us to make quotations in proof of this point.

We think that it is now apparent, that Lord Brougham was in error when he assumed that all the evidences of natural theology are deductive; for they are evidently of both kinds—some intuitive and some deductive, just as in all other inductive sciences. In other words, some of its evidences rest upon perception and consciousness and some upon reasoning. It is impossible to distinguish what items of evidence or knowledge are ascertained by perception and consciousness, and what by reasoning in every instance; yet it is easy to draw a line of difference between them by general definition; for every one knows that they differ widely from each other. It is therefore impossible, and we do not think that it is desirable, (for it is the case of every other inductive science) to show what amount of the evidence of natural theology, is founded upon perception and consciousness, and what amount upon reasoning. All that is requisite (if it be requisite at all to consider its evidences in this division) is to show in a general way that some of its evidences are founded upon the one, and some upon the other; and this is so easily done, and we conceive it to be of so little importance, that we will not make a particular topic of it; but will merely ask the reader to bear the matter in mind as he passes over the sequel of this part of our discourse.

Let us return to the proposition with which we set

out, that natural theology is a branch of the inductive philosophy; and is founded upon the same sort of evidence, as that upon which natural philosophy and metaphysics are based; which it is the object of this part of our discourse to establish, and which it was also the object of Lord Brougham's discourse to establish. The same error which pervades the first section, which is the portion of the discourse that we have been considering, runs through all the other sections; and super-added to this, there is in the second and third sections a continual dodging of the chief difficulty which the discourse was designed to remove—the difficulty of “explaining” as the author says on page 10, “the nature of the evidence upon which it (natural theology) rests—of showing that it is a science the truths of which are discovered by induction, like the truths of natural and moral philosophy—that it is a branch of science partaking of the nature of each of those great divisions of human knowledge, and not merely closely allied to them both:” all this will appear as we proceed. We will therefore endeavor to establish the proposition with which we set out, by meeting the difficulties, which our author shunned; and will at the same time, show how he has shunned them, and thus point out the defects in his discourse, while we supply them, or by pointing out in what they consist, show how they may be supplied.

Natural theology branches off into two paths of inquiry concurrently, or rather identically with natural philosophy and metaphysics; for in inquiring into the structure and relations of the physical and spiritual worlds, which are respectively, the objects of natural

philosophy and metaphysics, the evidences of their origin and destiny which are the objects of natural theology, are necessarily revealed to us, and forced upon our attention. In our inquiries into the physical and spiritual worlds, we cannot but observe the evidences of design displayed in them: in other words, when we are studying natural philosophy and metaphysics, the evidences of natural theology lie in our path at every step—we behold the footsteps of God imprinted on every part of these domains of inquiry. “The same induction of facts,” says Lord Brougham, “which leads us to a knowledge of the structure of the eye and its functions in the animal economy, leads us to the knowledge of its adaptation to the properties of light. It is a truth in physics, in the strictest sense of the word, that vision is performed by the eye refracting light, and making it converge to a focus on the retina; and that the peculiar combination of its lenses, and the different materials they are composed of, correct the indistinctness which would otherwise arise from the different refrangibility of light: in other words, make the eye an achromatic instrument. But if this is not also a truth in natural theology, it is a position from which, by the shortest possible process of reasoning, we arrive at a theological truth—namely, that the instrument so successfully performing a given service by means of this curious structure, must have been formed with a knowledge of the properties of light.” We have made this quotation both for the purpose of illustrating our position, and at the same time pointing out the defect, which runs through the whole discourse, of dodging the real difficulty, as is done in this quotation; for this may

be taken as a favourable sample of the instances in which the author explains the mental transition from the apprehension of a truth in natural philosophy, to the apprehension of a truth in natural theology. In no instance, has he explained it more accurately; for in many instances, he leaps the chasm which separates the truths of the two sciences, or bridges it over with a mere assertion; and thus passes by the very point to be proved. For example: he concludes the very paragraph, which we are now considering, thus—"These things are truths in both physics and theology; they are truths taught by the self-same process of investigation; and resting upon the self-same kind of evidence." This conclusion is preceded by no analysis indicating its truth: but merely by statements of facts in natural philosophy relative to the laws of light and their adaptation to the structure of the eye. So again, on page 51, after citing many examples of design in the psychological world, when he comes to prove that the theological doctrine inferrable from the examples, rests upon the same sort of evidence, as that upon which intellectual and natural science rests, he passes over the very point to be proved by this assertion—"The kind of evidence is not like, but identical with, that by which we conduct all the investigations of intellectual and of natural science." But to return, from this exposition, to the quotation above.—The proposition, "that the eye is an achromatic instrument," is certainly not a truth in natural theology; though it is evidence which proves a truth in natural theology—that it was made by an intelligent agent. For it is one thing to inquire into the uses of an object, and another to in-

quire into its origin—whether it was manufactured or not? One thing, to inquire into the structure of a watch, and another to inquire whether it was manufactured or produced spontaneously—to inquire into the use of a thing, and whether it was designed and fabricated for that use. But is the proposition, “that the eye is an achromatic instrument, a position from which by the shortest possible process of reasoning, we arrive at a theological truth”? May we not arrive at the doctrine, that the eye was made by an intelligent agent, simultaneously with the discovery that the eye is an achromatic instrument? Is not evidence of both truths revealed at the same time? Or are not both truths, different convictions produced by the same evidence, owing to different views of it? For example:—in inquiring into the functions of the eye on mechanical principles, with a view to ascertain what mechanical design it evinces, the only evidence of design, would be its round form, which makes it move more easily in the socket, so as to enable us to look about more readily; and the eye lids, which serve as a protection, and for the purpose of shutting up the eye; to prevent us from seeing when we desire to sleep. And these would be all the evidences of design, which optics would afford one acquainted with mechanics and anatomy, but ignorant of the laws of light. And thus stood the evidences of natural theology afforded by optics, until Sir Isaac Newton discovered the different refrangibility of the different rays of light. This discovery in natural science, now enabled us to discover the design of the other peculiar conformation of the eye—that its lenses refract light and make it converge to

a focus, and paint an image on the retina. Here, then, as optics progress, other evidences of design are revealed; and natural theology keeps pace with optics. Still our knowledge of optics is imperfect. Mr. Dolland discovers another law of nature—the dispersive powers of different substances; and this enables us to ascertain that the peculiar materials which the lenses of the eye are composed of, correct the indistinctness of vision, that would otherwise be produced by the different refrangibility of the different rays of light: and thus another adaptation of means to an end, is discovered; and the evidences of natural theology evinced by the human eye are complete. The science of optics is now investigated in reference to comparative anatomy; and it is here discovered, that the conformation of the eye is varied to suit, the different necessities of each animal. If the animal prowls by night, the conformation of the eye is such as to enable him to see in the dark: if he be amphibious, his eye is formed so as to suit the vision to the mediums of both air and water: if he be aquatic, his eye is constructed wholly with reference to the adaptation of light to water; and this change of conformation to diversity of circumstances, is seen throughout the whole science of comparative anatomy. In this investigation, it is perfectly obvious, that the truths of natural theology were revealed to us simultaneously with the truths in optics; for the truths of optics are the evidences of the truths of natural theology. In fact, the very idea of contrivance involves the idea of a contriver; and it may be doubted, whether in the acquisition of knowledge, the idea of contriver or agent, is not first in chronological order: it cer-

tainly is, if either be prior. It is also obvious, that the process of investigation is the same in optics and natural theology; for truths in both sciences were discovered in the same investigation; just as anatomical truths, and the truth of the different refrangibility of the rays of light, and the truth of the refractive powers of different substances, and of the dispersive powers of of substances; also, might have been discovered in the same process of investigation. All these various truths belonging to different sciences, may be discovered by the self-same inductive process; just as in an analysis of any complex phenomenon, truths belonging to different sciences are always discovered, in the resolution of such a phenomenon into its several causes. The process of investigation in natural theology, is just as obviously inductive, as that in physical science.—For example—one instance of adaptation of means to ends, is discovered, and another, and another, until the observer is forced by the laws of his mind, to believe, that so many contrivances adjusted so nicely for bringing about certain ends, must have been fabricated for the purpose, by some agent of knowledge competent to the task.

It is manifest, then, that the evidence of natural theology is of precisely the same character, as that on which natural philosophy rests; and like all other evidence, produces conviction when contemplated independently of our volition. Its evidences cannot be comprehended, without our being persuaded of its truths. That some have not been persuaded of its truths, though they have understood the evidences, or perceived the designs, does not result from the fact that

the evidences had no tendency to convince them; but because preconceived opinions overruled or counteracted the force of these evidences: so that their opinions do not result from any inherent defect in the testimony any more than the inefficiency of medicines in some cases, does not result from the defect of the medicines but from the condition of the patients. The instant we discover contrivance, adaptation of means to ends, in any part of creation, whether in the physical or spiritual worlds, we are irresistibly led to infer an intelligent artificer. Who, for instance, can read the Bridgewater Treatises, and contemplate the innumerable instances of contrivance, adaptations of means to ends, order, and harmony, there collected, and not be convinced that such innumerable arrangements so conducive to purposes, and so certainly accomplishing them, and in many instances accomplishing them by such a number and variety of means changed to suit a change of circumstances, all working to accomplish particular purposes which are important in themselves, and yet, by the harmony of their action accomplishing with unerring certainty, and in some instances, at such long and regular intervals of time, the main purpose of all the arrangements combined, must have been made by design; and that an agent exists capable of contriving the whole—of conceiving the purposes, and adapting the means, and adjusting them so nicely, for executing these purposes? A much more limited induction of instances of any other class, would convince any one, of any truth in physical science. The most cautious philosophers are continually inferring physical causes from a much more limited induction of facts.

We have, then, the same kind, if not the same degree of evidence, and we will say the same degree, for believing in the existence of an intelligent first cause or agent, as we have for believing in the existence of gravity or any other physical cause. The evidence of the one is just as obvious as that of the other—shines with as bright a light from every part of creation.—Why, then, should it not strike home upon the mind, as strong a conviction of the peculiar doctrines which it teaches? Is it because we infer an invisible agent, from sensible phenomena? But may not this question return upon him, who asks it, to know whether we do not continually infer invisible physical causes from sensible phenomena? Will it be said that the existence of an intelligent artificer, cannot be proved by contrivances, adaptations of means to ends, order, and harmony, just as the existence of a physical cause, can be proved by the motions and changes around us? It certainly can; and the grounds, upon which the proofs in both instances rest, will be pointed out in the sequel, in treating of causation in connection with Mr. Hume's Essay.

We will not consider the branch of natural theology, which runs identically with metaphysics, as the remarks upon the branch, which we have considered, can be easily applied to this branch; and as the defects in Lord Brougham's Discourse, are precisely the same in both branches, and therefore need not be pointed out in this branch.

As we have now examined the nature of the evidence on which natural theology rests, we will next endeavour to point out its exact place among the sci-

ences, and its precise relations to them. And this, we think, cannot be done better, than by showing what Lord Bacon has said on the subject; especially too, as we shall thereby vindicate the opinion of this great man on this subject, from the idle censures of blundering ignorance, or the wilful perversions of envious detraction endeavouring to cover over Lord Bacon's opinions, in order that it may gain the credit of having first discovered the proper place of natural theology among the sciences; when, in fact, all that they have said truly on the subject, was said in a general way by Bacon, and whenever they have refused to follow this illustrious guide, they have gone astray from the truth.

Lord Bacon, in his *Advancement of Learning*, after speaking of history and poetry, says:—"The knowledge of man is as the waters, some descending from above, and some springing from beneath; the one informed by the light of nature, the other inspired by divine revelation.—So then according to these two differing illuminations or originals, knowledge is first of all divided into divinity and philosophy."

"In philosophy, the contemplations of man do either penetrate unto God,—or are circumferred to nature,—or are reflected or reverted upon himself. Out of which several inquiries, there do arise three knowledges, divine philosophy, natural philosophy, and human philosophy or humanity."—page 131, Basil Montague's edition.

"And as concerning divine philosophy or natural theology, it is that knowledge or rudiment of knowledge concerning God, which may be obtained by the contemplation of his creatures; which knowledge may

be truly termed divine, in respect of the object, and natural, in respect of the light.—For as all works do show forth the power and skill of the workman; so it is of the works of God, which do show the omnipotency and wisdom of the maker. Wherefore by the contemplation of nature, to induce and enforce the acknowledgment of God, and to demonstrate his power, providence and goodness, is an excellent argument, and hath been excellently handled by divers.”—pages 135—6.

“Natural science or theory (natural philosophy) is divided into physique and metaphysique: wherein I desire, it may be conceived that I use the word metaphysique in a differing sense from that, that is received: and in like manner, I doubt not it will easily appear to men of judgment, that in this and other particulars wheresoever my conception and notion may differ from the ancient, yet I am studious to keep ancient terms. To return, therefore, to the use and acceptation of the term metaphysique as I now understand the word. It appeareth likewise, that natural theology, which heretofore hath been handled confusedly with metaphysique, I have enclosed and bounded by itself. It is, therefore, now a question, what is left remaining for metaphysique; wherein I may without prejudice preserve thus much of the ancient of antiquity, that physique should contemplate that which is inherent in matter, and therefore transitory; and metaphysique should handle that which supposes further in nature a reason, understanding and platform—the one part which is physique, inquireth and handleth the material and efficient causes; and the other which is metaphy-

sique handleth the formal and final causes.”—pages 141—2.

“For metaphysique, we have assigned unto it, the inquiry of formal and final causes.”—page 144. Lord Bacon then proceeds to inquire into formal causes, by which he means causes of a higher degree than physical causes, in *his* meaning of this latter term, and then proceeds to the second part of metaphysique.

“The second part of metaphysique, is the inquiry of final causes, which I am moved to report not as omitted, but as misplaced; and yet if it were but a fault in order, I would not speak of it; for order is matter of illustration, but pertaineth not to the substance of sciences. But this misplacing hath caused a deficiency or at least a great improficiency in the sciences themselves. For the handling of final causes, mixed with the rest in physical inquiries, hath intercepted the severe and diligent inquiry of all real and physical causes, and given men occasion to stay upon these satisfactory and specious causes, to the great arrest and prejudice of further discovery.—Not because those final causes are not true, and worthy to be inquired, being kept within their own province; but because their excursions into the limits of physical causes, has bred a vastness and solitude in that track. For otherwise keeping their precincts and borders, men are extremely deceived, if they think there is an enmity or repugnancy at all between them. For the cause rendered that the hairs about the eye-lids are for a safeguard of the sight, doth not impugn the cause rendered, that pilosity is incident to orifices of moisture; and so of the rest: both causes being true and compatible,

the one declaring an intention, the other a consequence only."—pages 148—150.

It will be seen by these extracts, that Bacon first divides knowledge into divinity (revelation) and philosophy. He then proceeds to consider philosophy; and divides it into three parts, divine philosophy or natural theology, natural philosophy and human philosophy. As the first in order, he then treats of natural theology, and says with great sagacity, that it "may be truly termed divine in respect of the object, and natural in respect of the light;" that is, the subject of which it treats, is divine, but the evidence on which it rests is natural, or founded on the constitution of nature; the very doctrine which Lord Brougham's whole treatise was designed to establish. He next proceeds to the consideration of natural philosophy, and divides it into physique and metaphysique; and defines the province of physique to be the inquiry into physical causes; and after treating of this branch of natural philosophy at some length, he proceeds to the other branch, which he calls metaphysique; and we bespeak the particular attention of our readers to this branch of Bacon's division of natural philosophy, asking them to bear constantly in mind, the sense in which he uses the term, as a part of natural philosophy, and not according to its present acceptation, the science which treats of mind.

Bacon defines metaphysique, to be that part of natural philosophy which inquires into formal and final causes. After treating of formal causes, by which he means causes of a higher degree than physical causes, in *his* sense of this latter term, he proceeds to consider final

causes. The term final causes, he uses in its common acceptance, the designs manifested in creation, "that the hairs about the eye-lids are for a safe-guard of the sight; that the firmness of hides is for the armor of the body against the extremities of heat or cold, declaring an intention and not a consequence only." He then, in order to do away the evils which had resulted to philosophy, from considering final causes confusedly with physical causes, "for the handling of final causes mixed with the rest in physical inquiries, had intercepted the severe and diligent inquiry of all real and physical causes," has divided natural philosophy into two parts, *physique* and *metaphysique*, in order to separate the two kinds of causes, and to prevent final causes from being considered to the exclusion of physical causes. However useless such a division may be at this advanced stage of science, it was necessary at the time Bacon wrote; for the consideration of final causes, had led men from the consideration of physical causes—"had given them occasion to stay upon these satisfactory and specious causes, to the great arrest and prejudice of further discovery. "To say," says Bacon, "that the hairs of the eye-lids are for a quick-set and a fence about the sight; or that the firmness of the skins and hides of living creatures is to defend them from the extremities of heat or cold, is well inquired and collected in *metaphysique*; but in *physique* they are impertinent.—Not because those final causes are not true and worthy to be inquired, being kept within their own province (*metaphysique*); but because their excursions into the limits of physical causes hath bred a vastness and solitude in that track." Bacon there-

fore, considered final causes as a part of the evidence on which natural philosophy rests; and very wisely too; for some great discoveries in natural philosophy have been made by the light of final causes. For example:—the discovery of the circulation of the blood was ascertained by the consideration of final causes; as also were the two sets of nerves. And indeed without the evidence of final causes, little progress would have been made in anatomy; for it is by considering the supposed functions of the different parts of the human system, that its exact anatomy is ascertained; as is evinced by the minute and useful anatomical researches, the supposed functions of the liver, the colon and other intestines are leading to, in the structure of these organs; while at the same time, the structure of these organs is aiding in ascertaining their functions; and all these again, conducting to a knowledge of correct pathology. And we find that Mr. Locke has used an argument founded upon final causes (the uses of the faculties) against the doctrine of innate ideas, thus making final causes evidences in intellectual philosophy. “For any one will easily grant,” says he, “that it would be impertinent to suppose the ideas of colours innate in a creature, to whom God has given sight and a power to receive them by the eyes from external objects; and no less unreasonable would it be to attribute several truths to the impressions of nature and innate characters, when we may observe in ourselves faculties fit to attain as easy and certain knowledge of them, as if they were originally imprinted on the mind.” 1st vol. 16 chap. 2d. b.

We see then, that Bacon makes final causes evidence

in natural philosophy that part of it embraced in the division which he calls metaphysique. Now natural theology also, rests entirely upon the evidence of final causes, the contrivances and adaptations of means to ends manifested in creation; and therefore Lord Bacon has with great sagacity, distinguished the use of final causes as evidence in natural philosophy, by bounding natural theology to itself. "Natural theology," says Bacon, "which heretofore hath been handled confusedly with metaphysique (*his* sense of the term) I have bounded by itself." Before Bacon's time, men had, in handling final causes considered them as evidence in both natural philosophy and natural theology in one and the same treatise; thus confounding the two sciences together, and retarding the progress of both. At one moment they would in the same inquiry, consider the theological doctrine based upon final causes, and at the next moment, consider the philosophical doctrine based upon them; to the utter confusion of all connected thought and definite inquiry. Bacon then, considers final causes in two points of view—first as evidence in natural theology; and secondly, as evidence in natural philosophy. We believe that every writer on natural theology, has overlooked the fact that Bacon, has made this twofold division of the enquiry into final causes.—This oversight has arisen from the fact, that Bacon does not use the term final causes, when he speaks of natural theology; and also from the fact, that he uses the term metaphysique in a different sense from its present acceptation. And all writers who have quoted the concluding remarks on metaphysique, "not because those final causes are not true and worthy to be

inquired, being kept within their own province," have supposed that Bacon meant, natural theology, by "their own province;" whereas the whole tenor of the argument shows, that he means, that part of natural philosophy, which he calls metaphysique. He is showing that final causes have not been kept within the province of metaphysique; but have been considered confusedly with physical causes—"that their excursions into the limits of physical causes, hath bred a vastness and solitude in that tract. For otherwise, keeping their precincts and borders (metaphysique) men are extremely deceived, if they think, there is an enmity or repugnancy at all between them;" that is between physical causes and final causes, both as evidence in natural philosophy: and this is the more obvious, as Bacon never applies the term final causes to the contrivances of nature, when considered as evidence in natural theology, but only when considered as evidence in natural philosophy; thus affording evidence of the maturity and precision of his reflections upon this point. Let any one read Bacon's writings with this view of his doctrines in regard to final causes, and the occasional remarks which appear to disparage the inquiry into final causes, can be easily reconciled with the doctrines so deliberately expressed in the Advancement of learning.

It is manifest that Lord Bacon considered natural theology a branch of the inductive philosophy, based upon the same sort of evidence, as that upon which natural philosophy and metaphysics rest, "it being natural in respect of the light, though divine in respect of the object." He makes it a branch of philosophy

because its evidence is founded in nature; not a branch of divinity, its evidence being derived from revelation. "The knowledge of man" says he, "is as the waters, some descending from above, and some springing from beneath; the one is informed by the light of nature, the other inspired by divine revelation.—So according to these two different illuminations or originals (different sorts of evidence) knowledge is first of all, divided into divinity and philosophy." Now, has not Bacon defined the place of natural theology among the sciences, and pointed out its relations to them, with at least as much precision as Lord Brougham? Why, then, does Lord Brougham write his whole discourse, as though he claimed the merit of assigning to natural theology, its true place among the sciences? It is true, that one section of the discourse, is taken up with the consideration of what Bacon had said upon the subject; but after quoting detached remarks of Bacon upon final causes, which were not spoken in reference to natural theology at all; and expressing many misapprehensions of Bacon's meaning, he concludes, that on the whole, "when rightly examined, then, the authority of Lord Bacon appears not to oppose the doctrine which we are seeking to illustrate." "Appears not to oppose"!! So then all that the noble author could see, in the elaborate care, and extreme precision, with which Bacon has defined the boundaries of natural theology, and indicated the nature of the evidence on which it rests (for he has been as careful about natural theology, in this respect, as about any other science), is that he appears not to oppose the science of natural theology. Is this ignorance? or is it

wilful perversion, desiring to establish his own claim to the merit of discovering the place which natural theology holds among the sciences? This Olympic Jupiter of British criticism, has no right to complain of the severity of our strictures; for he has been for the last twenty years continually hurling his bolts, without the least mercy, upon authors in every department of literature; and while we have pointed out the errors which more than disfigure his discourse, we here gladly acknowledge, that it throws the light of much learning, upon the subject of natural theology, and contains some specimens of fine writing, that entitle its author, to stand in the very first rank of the great masters of diction.

As we have shown, that natural theology is a branch of inductive philosophy, and is based upon the same sort of evidence, as that upon which natural philosophy and metaphysics repose, we will next proceed to combat the objections which have been urged against it, and to point out the chief source of the error of the objections; and in doing this, to extend our inquiry still further into the evidences of natural theology, until we trace them up to the very origin of the main idea on which the whole science rests.

Many philosophers, and amongst them, Descartes and Leibnitz, men of immense genius, and of vast attainments in every department of knowledge, have decried final causes, as unworthy to be admitted within the circle of legitimate philosophical evidence. La Place, too, one of the most illustrious names of modern times, has rejected final causes from philosophy. "Let us run over," says he, "the history of the progress of

the human mind and its errors: we shall perpetually see final causes pushed away to the bounds of knowledge. The causes which Newton removed to the limits of the solar system, were long ago employed in explaining meteors. They are therefore, in the eyes of the philosopher, nothing more than the expression of the ignorance in which we are of most real causes." But so far as authority goes, it is decidedly favourable to the evidences of final causes. To say nothing of the many distinguished writers of the present day, we can point to the father of inductive philosophy, to Copernicus, to Kepler, and to the great genius of the human race, the man who had drunk deeper into the fountains of true philosophy, than any one who ever lived, as having borne their testimony in their favour. After Newton had passed on his sublime career, from planet to planet, and from system to system, until he had stepped from the golden ladder of geometry upon the remotest star; when he looked down and saw how far he was above the highest point to which any other philosopher had ever climbed, if he had excluded final causes from his philosophy, he would have supposed himself upon the very summit of science, and would have exclaimed, "there is no God; for if there were, here would be his dwelling place;" and this atheistic declaration would have been the conclusion of the immortal Principia. But in the spirit of the true philosophy, Newton directed his eye still upwards, and by the light of final causes, saw the heights of inductive science towering still far above him, and stretching on to the throne of an intelligent Creator; and then, with the same confidence in which he had written the other

great truths of nature, he penned his "General Scholium," declaring there is a God, and made it, the sublime conclusion of his immortal labours.

We think, that much, if not all the error relative to natural theology, has originated in the use of the term, "final causes." The use of this term has led to great confusion of ideas in regard to causation, and has also led men to confound an intelligent Creator, with a mere physical cause—to thrust a mere mechanical cause into the place of God. Mr. Hume in his "Essay on a particular Providence and a Future State," from the beginning to the end of his argument, confounds an intelligent Creator, with a mere physical cause; and as soon as this is perceived, the fallacy of his argument becomes manifest. This argument of Mr. Hume, is the great bulwark of atheism; "and we may the rather conclude," says Lord Brougham, "that it is not very easily answered, because, in fact, it has rarely, if ever, been encountered by writers on theological subjects." We will, therefore, expose what appears to be the chief error of this argument; as we believe that the same error lies at the bottom of all objections to natural theology.

The Collocutor (who speaks Mr. Hume's sentiments,) says—you then, who are my accusers have acknowledged, that the chief, or sole argument for a divine existence (which I never questioned,) is derived from the order of nature; where there appear such marks of intelligence and design, that you think it extravagant to assign for its cause, either chance, or the blind and unguided force of matter. You allow that this is an argument drawn from effects to causes.—

When we infer any particular cause from an effect, we must proportion the one to the other, and can never be allowed to ascribe to the cause any qualities but what are sufficient to produce the effect.—The same rule holds, whether the cause assigned, be brute unconscious matter or rational intelligent being. If the cause be known only by the effect, we ought not to ascribe to it any qualities beyond what are precisely requisite to produce the effect—nor can we by any rules of just reasoning return back from the cause, and infer other effects from it, beyond those, by which alone it is known to us. No one merely from the sight of one of Zeuxis's pictures could know, that he was also a statuary or an architect, was an artist no less skilful in stone and marble than in colours. Allowing, therefore, the Gods to be the authors of the existence or order of the universe; it follows that they possess that precise degree of power, intelligence, and benevolence, which appears in their workmanship; but nothing farther can be proved, except we call in the assistance of exaggeration and flattery, to supply the defects of arguments and reasoning."

We perceive that in this argument, God is expressly and designedly likened to, and confounded with any physical cause, and that the one is reasoned from to the other; and the whole argument throughout all its parts is conducted upon the supposition that there is no difference, "whether the cause assigned, be brute unconscious matter, or rational intelligent being;" and all the doctrine advanced by Mr. Hume, can be sustained upon this supposition only. But is it not obvious to the plainest understanding, that there is a wide

difference between a mere physical cause, and an intelligent Creator? What is a physical cause? It is an event or fact, which constantly precedes another in nature. For example: heat always precedes ignition in a body; and when we meet with a burnt stick, we therefore assign heat as the cause of the ignition.—What we mean then, by causation in the physical world, is nothing more, so far as our knowledge extends, than the constant conjunction or succession of two events or facts. We do not know, whether the cause, or antecedent fact, does contain an operative principle which produces the effect or sequent fact, or not; for we can readily conceive that this conjunction or succession might have been otherwise—that fire might freeze, instead of burn; at least such a supposition involves no contradiction in thought, and therefore appears to be within the limits of possibility. And in inferring a cause from an effect, we must not infer one more than adequate to produce the effect. And in the progress of science, causes are continually being resolved into other causes, these again into causes still more remote; and as causes thus become effects, or in truth, their real character is thus ascertained to be nothing more than facts standing in constant conjunction or succession with other facts in the order of nature, as A stands before B, in the alphabet, and that it might have been otherwise. Such, then, is a physical cause; and that it is such, Mr. Hume is one of the most strenuous advocates; and then of course, it must be to such an idea of a physical cause, that he likens the Creator throughout his argument.

Now, to clothe the Creator with the attributes of

a physical cause; and to limit 'his operations to the mere works which he has already made, as we limit a cause, to its known effects, is most preposterous.— There is no analogical or deductive connection between them, upon which either an inference or an argument from the one to the other, can be based. Mr. Hume has entirely misconceived the argument for the existence of a Divine being. It is not based upon the doctrine of cause and effect as exhibited in the physical world, at all (which will be more clearly shown in the sequel, when we treat of the origin of the idea of causation); but is based upon the contrivances indicative of design, which appear in every part of the universe, to which the term, "final causes," has been very improperly applied; thus extending the idea of causation, to a case in which it does not apply in its ordinary signification. We can never infer the existence of an intelligent being or agent, from the mere antecedence and sequence of facts or phenomena, however constant it may be; for there is nothing in this, that evinces intelligence. The mere fact that fire burns, or that cold freezes, can not give us the least ground for inferring the existence of an intelligent agent. But it is by observing the contrivances, the adaptations of means to ends, by which certain results are brought about, displayed in the universe, that leads us to infer the existence of an intelligent agent, who designed and fabricated them. And why do we draw this inference?— Because contrivances, and adaptations of means to ends are marks of intelligence. But how do we know, that they are marks of intelligence? By observing the works of men. But how do we know that the works

of men evince intelligence? By a knowledge derived from consciousness of the exercise of intelligence by ourselves in conceiving designs and executing them by contrivances and adaptations of means to ends. We therefore, arrive at the knowledge of the Creator, (his existence being implied in such knowledge,) in the same manner, that we arrive at the knowledge of men—by comparing his works with our own. If we see a watch for the first time, we know that it was made by an intelligent being, though we never saw one fabricated. So if we see an animal with all its admirable contrivances, we know that it must be the work of an intelligent being also; because both equally evince design and intelligence; and experience, as well as an original principle of our minds compel us to ascribe both to a similar cause or agent, as they both have the appearance of a manufactured article. This is an act of ordinary induction of two facts under one class or principle. We look at the facts or phenomena in one point of view only—that of design; and this is the point we generalise. The difference in the facts, whether in the excellence of workmanship, in the material, or in the particular objects of the contrivances, cannot affect the justness of the classification; for this difference has nothing to do logically, with the point generalised. This is a well established inductive principle, upon which we are continually acting in the ordinary affairs of life, as well as in philosophical pursuits. We have thus by the strictest induction brought God and man under one class—that of intelligent beings or agents; and of course, we can reason from the one to the other, to the full extent of that classification;

and we will show in the sequel, that on this ground the evidences of natural theology are impregnable.

“We can never return back,” says Mr. Hume, “from a cause and infer other effects from it, than those by which it is already known to us.” This, we apprehend, cannot be said of man as an intelligent agent.— Could we not justly argue or infer that the artificer could make another watch, or that Zeuxis could paint another picture? It is impossible for us to think otherwise. The very same reasons will compel us to infer that God or the intelligent agent, who made the animal, could make another. If it be denied that Mr. Hume’s argument goes to this extent, (though we assert that it does), yet, it cannot be denied, that it goes the extent of denying, that God can make any thing, the least variant from what he has already made. Which, according to the induction we have made of God and man, under one class—that of intelligent agents, is virtually asserting, that because a man has made an axe, we have no right to suppose, that he could make a hammer; or that because he has made a boot, we have no right to suppose or infer that he could make a shoe; or that because he has made a watch or a steam engine, that he could make a syringe or any the most simple utensil; for if an intelligent agent be like a physical cause, he must be confined to his known works; and we have no more right to infer smaller effects from a cause, than those which it is known to produce, than we have to infer larger. It is true, we would not be justified in inferring, Zeuxis was a statuary, from the fact that he was a painter; neither would we be justified in inferring that he was *not* a statuary; for, from the na-

ture of mind, we know that he might be, and a poet and a mathematician also; for it is the nature of mind to perform various operations, as the various works of man attest. We have proved God to be mind, or an intelligent being, and of course he must possess various powers; for a mind or intelligent being with capacity to do one work only is incomprehensible; or at least contrary to experience and the analogies of nature. And does not the universe indicate the most various powers in its artificer? A perfect acquaintance with all science is evinced in its adaptations of means to ends, its laws, and its order. It is evident therefore, that it is unphilosophical, and indeed absurd, to limit the powers of God to what he has done, as we limit a cause to its known effect. Such a notion is contrary to all the analogies of mind as exhibited by men; and it is from observing the minds of men as manifested in their acts, and ultimately our own minds, (as we have shown,) that we infer the nature of God; and not from the consideration of physical causes; to which God bears no analogy whatever, and from the contemplation of which alone, it would be impossible ever to infer the existence of such a being.

But if we push out Mr. Hume's argument a little further than he has done, (and we have a right to do it,) its erroneousness can be more clearly exhibited.— If we must infer that God can do more than he has already done, we have no right to infer, that the sun will rise to-morrow, or that the world will continue another moment, or that the seasons will follow each other as they have done, or that the existence of any thing can be continued another moment; because we must

limit the cause to those effects, "by which alone it is known to us." In reference to this point, Mr. Hume says—"In works of human art and contrivance, it is allowable to advance from the effect to the cause, and returning back from the cause, to form new inferences concerning the effect, and examine the alterations, which it has probably undergone, or may undergo. But what is the foundation of this method of reasoning?—Plainly this; that man is a being whom we know by experience, whose notions and designs we are acquainted with, and whose projects and inclinations have a certain connection and coherence, according to the laws, which nature has established for the government of such a creature." Well, cannot the same be said of God? Mr. Hume answers, *no!* "The Deity is known to us, only by his productions, and is a single being in the universe not comprehended under any species or genus from whose known attributes, we can by analogy infer any attribute or quality in him."—We have shown, that we have a right to draw the very same inferences in regard to the power of God, to repeat and vary his operations, that we draw in regard to man; because we brought them under the same classification—the same "species or genus," and can therefore infer by analogy the attributes and qualities of God from the experienced attributes or qualities of man. We have as much right to infer, that God can create other worlds, as we have to infer that man can make another watch or other machine. The very constitution of our minds, upon the comprehension of the evidence, necessitates such an inference in both instances. We cannot believe otherwise if we wish-

ed to do so; for the very notion that God is an intelligent being forces such a conviction upon us. But does not Mr. Hume, when he admits that man can repeat and vary his operations, virtually admit that God can do so? For it must be through the power of God upholding him, that man is enabled to do it; and this proposition Mr. Hume does not deny. Mr. Hume's argument goes the full length of destroying everything like inductive inference; and confines our knowledge to what is now present to our senses and consciousness and memory. If this narrow circle embraced all legitimate knowledge, all our hopes would be blasted; by the most withering skepticism.

From this train of reasoning, Mr. Hume, though he admits that there is a God, concludes, that we have no right to attribute, either omniscience or omnipotence to him; or suppose that he has either the power or inclination to continue our existence in a future state; for we must limit his powers to what he has done.— We can not stop to show the fallacy of these conclusions; as the scope of this discourse confines us to the consideration of the evidences of natural theology, and does not permit us to consider its doctrines.

It is obvious, that the great error of Mr. Hume's argument consists in confounding the Creator with a mere physical cause; and applying the doctrines of mere causation, to the creative operations of an intelligent agent. The same error is apparent in the quotation from La Place, where he says final causes are perpetually "pushed away to the boundaries of science." And the same error is the source of most, if not all, of the false doctrine relative to natural theology.

As Mr. Hume's argument relative to a particular providence and a future state, is intimately connected with his doctrine of cause and effect; and as the portion of his doctrine of cause and effect, which relates to the origin of the idea of causation or power, is radically erroneous, we will examine this portion of his doctrine and expose its errors.

"All reasoning concerning matters of fact," says Mr. Hume, "seems to be founded on the relation of cause and effect. By reason of this relation alone, we can go beyond the evidence of our memory and senses. If we would satisfy ourselves, therefore, concerning the nature of that evidence, which assures us of matters of fact, we must inquire how we arrive at the knowledge of cause and effect. The knowledge of this relation is attained by experience, and not by reasoning a priori.—The principle which determines us to form a conclusion from the past to the future, is custom or habit. And it is certain, that we here advance a very intelligent proposition at least, if not a true one, when we assert that after the constant conjunction of two objects, heat and flame, for instance, weight and solidity, we are determined by custom alone, to expect the one from the appearance of the other. All inferences, therefore, from experience, are effects of custom, not of reasoning."

We will commence with Mr. Hume's last proposition; and deny, that it is custom or habit, which determines us to draw conclusions from the past to the future, or to infer cause from effect. On the contrary, we maintain, that it is an original principle of the mind, which is exercised from earliest infancy; though

the exercise of it, like that of every other principle of the mind, is corrected by experience. This principle is a fundamental law of the mind, like the principles by which we believe in our own existence, and in the existence of external objects. It determines us to believe that the future will be like the past, and that similar causes will produce similar effects. The inference is not intuitive, neither is it demonstrative, but we are compelled to draw it, by an original principle of the mind, called the fundamental law of inductive belief. This principle has been developed, since the days of Hume, by Dr. Reid; as we have shown in the second part of this discourse. We will here quote Mr. Hume against himself; and show that he has admitted this very principle in some of his reasonings.—In a preceding chapter, where he argues that the inference from effect to cause, is not an argument, he says “When a child has felt the sensation of pain from touching the flame of a candle, he will be careful not to touch any candle; but will expect a similar effect, from a cause which is similar in its sensible qualities and appearances. If I be right, I pretend not to have made any great discovery. And if I be wrong, I must acknowledge myself to be indeed, a very backward scholar; since I cannot now discover an argument, which it seems was perfectly familiar to me, long before I was out of my cradle.” Mr. Hume, here says, that a child will infer that *any* candle will burn, because the one which he touched, did so. Now this inference surely cannot be from custom or habit; for it would be a strange sort of custom or habit, that is acquired by a child in a moment. As we do not know how old Mr.

Hume was before he left his cradle, we cannot determine, whether there is any contradiction in his saying, that he was perfectly familiar with what he calls custom or habit, long before he was out of his cradle, and shall leave this point to be determined by his nurse.—

We do not care whether Mr. Hume calls the thing custom or habit or by any other name, so he admits that the child brings it into the world with it, and exercises it from earliest infancy, as he does admit, if he means anything in this last quotation. In illustration of his doctrine of custom or habit, he makes a supposition of a person of the strongest faculties of reason and reflection, brought suddenly into the world; and says that such a person, “would immediately observe a continual succession of objects, and one event follow another; but would not be able to discover any thing further. Such person without more experience could never employ his conjecture or reasoning concerning any matter of fact, or be assured of any thing beyond his senses or memory.” Here Mr. Hume says, that a person of the strongest faculties of reason and reflection, could only from experience do what a child, he admits, does at once, and what he was perfectly familiar with long before he was out of his cradle. In another place, speaking of the operation, by which we infer like causes from like effects, he says, it is not “trusted to the fallacious deductions of our reason. It is more conformable to the ordinary wisdom of nature, to secure so necessary an act of the mind by some instinct or mechanical contrivance, which may be infallible in its operations, may discover itself at the first appearance of life and thought, &c.” What he here calls

"natural instinct, which discovers itself at the first appearance of life and thought," he before calls custom or habit. In the first of the two last quotations, he obviously makes his person to suit his argument, and then tries to prove his argument by his person; which is reasoning in a circle. The fact is, he contradicts himself, so often, on this point, that his writings remind us of a wheat field, with a good deal of rye in it. At first, you cannot distinguish whether it is a field of wheat or a field of rye; but on a nearer view and a closer examination, we discover, that there is more wheat than rye, and therefore conclude, that it was intended for a field of wheat.

The manner in which Mr. Hume has fallen into these contradictions, is this: he first argues that the inference from the past to the future, or from effect to cause is founded on experience, and adduces such arguments to prove it, as will make this point strongest when taken alone. And in the second place, he contends, that it is not reasoning a priori, or a reasoning process at all; and adduces such arguments, as will make his point strongest when taken alone, losing sight of the arguments on the other point; and thus when the arguments on both points are brought into juxta position, as we have brought them, they are found in conflict and destroy each other, and leave the truth in undisturbed security.

In the recapitulation at the end of the essay on necessary connection, between cause and effect, Mr. Hume says, "Every idea is copied from some preceding impression or sentiment; and when we cannot find any impresston, we may be certain that there is

no idea. In all single instances of the operation of bodies, or minds, there is nothing that produces any impression, nor consequently can suggest any idea of power or necessary connection. But when uniform instances appear, and the same object is always followed by the same event, we then begin to entertain the notion of cause and connection. We then feel a new sentiment or impression, to wit, a customary connection in the thought or imagination, between one object and its usual attendant; and this sentiment is the original of that idea, which we seek for. For as this idea arises from a number of similar instances and not from any single instance; it must arise from that circumstance, in which the number of instances differ from every individual instance. But this customary connection, or transition of the imagination, is the only circumstance, in which they differ. In every other particular they are alike."

The sentiment of customary connection, is certainly not very intelligible; and surely the idea of power is not a copy of it, according to Mr. Hume's own theory; because according to his theory, the idea differs from its impression or sentiment in vivacity only. They are, says he, in his essay on the origin of ideas, "distinguished by their different degrees of force and vivacity." Now the impression or sentiment of connection is different in kind from the idea of power; does not come under the same class. The idea of power must according to Mr. Hume's own theory, be a copy of the impression or sentiment of power, just as the idea of heat is a copy of the impression of heat, or the idea of a tree is a copy of the impression of a

tree, or the idea that any act of the mind is a copy of the sentiment of that act. They must be of the same kind, and "distinguished by their different degrees of force and vivacity." Mr. Hume means by impression, the effect produced on the mind when the object is present to the senses, or an emotion or other mere mental act, as love or hatred, is actually taking place, and by idea, the notion of this impression or this object or emotion when recalled by the memory. In another place, he says "that the idea of power can never be derived from the contemplation of bodies in single instances of their operation; because no bodies ever discover any power, which can be the original of this idea;" and he might have added, that a number of instances do not discover any power either, which can be the original of this idea. The only difference in the effect upon the mind, produced by a single instance and a number of them, is in degree of certainty. For example:—the application of heat to metal would give the impression that heat can fuse metal, and a number of instances of its application could only add certainty to our conviction: but could never suggest the idea, that heat can transmute metal into wood, or change the original impression into an idea entirely different from it. It is evident, then; that the idea of power or cause is not derived from the contemplation of a number of instances of conjunctions between the same facts or events, as Mr. Hume contends. But here the question suggests itself, how can this doctrine of customary connection, be reconciled with the declaration that the child will get the idea that any candle will burn, from the fact that one did so? The

child must certainly from the one instance, have derived the idea that the candle had the power to burn, or which is the same thing, was the cause of the pain, and that any other candle would produce the same effect. Here, then, let us pause and look back, with a feeling of melancholy pity, at the laborious and toilsome efforts, of a great genius striving to overturn the foundations of all our religious hopes, ending at last in such gross contradictions and absurdities as would almost disgrace a child!

It is evident from the foregoing considerations, that the idea of power or cause, is not derived originally from custom or habit in contemplating many instances of the conjunction or succession of the same phenomena in the physical world. On the contrary, we maintain that it is not derived from the contemplation of the phenomena of the physical world at all—the conjunction or succession of the same events, either in many or single instances; for it seems very clear that we could never derive the idea of power from merely contemplating the constant succession of two events or phenomena: but that it is derived from mental phenomena—from the consciousness of power in ourselves, to act or produce effects, or even make exertion; and that we transfer this idea of power or causation to what we call causes in the physical world. Suppose we had been from infancy shut up in a dark cave, with our body and limbs encrusted in plaster so that we could neither see motion in external bodies, nor be capable of producing it in ourselves, and therefore could have no idea of it whatever: still we would have a complete idea of power or force derived from conscious-

ness in ourselves of an endeavor, a nîsus, an exertion, and a consequent fatigue and exhaustion. If, then, we were put into a state of insensibility by an opiate, and then removed into the light, where we could see inanimate things in motion, such as a stone rolling, we would have no idea that power or force was the cause of the motion; but if we were now freed from the plaster, and discovered that by the endeavor, the nîsus, the exertion of which we were before conscious, we could move our limbs, and by their instrumentality other bodies, we would begin to ascribe all the motions in the physical world, which were before inexplicable, to some hidden force; and thus transfer an idea derived exclusively from consciousness, to phenomena in the physical world. This is the history of the chronological order, in which every mind acquires its knowledge of causation in the physical world. And this is not a single instance, an anomaly, in mental phenomena; for the poet is continually transferring ideas derived from consciousness to material things, in his personifications. No one will pretend, that there is, in the physical world, any thing but motion, that can suggest the idea of force to us; and it is very certain, that this can do it, only by association in the manner which we have developed; for there is nothing in motion that can suggest the idea of force to us a priori.—There is no analogy or perceptible relation between them; and force produces equilibrium as well as motion. It may perhaps be asked, how does a child get the idea that a candle has the power to burn, just from a single instance? By association in the manner we have shown; for power is, if not the very first,

certainly among the first things we are conscious of, in the acquisition of knowledge; for, on no other hypothesis, can any rational explication of psychological phenomena be given. Mr. Hume thus argues against this doctrine: "The influence of the will over the bodily organs, is a fact, which like all natural events, can be known only by experience, and can never be foreseen from any apparent energy or power in the cause which connects it with the effect, and renders the one an infallible consequence of the other. The motion of our bodily organs follows upon the command of the will. Of this we are every moment conscious. But the means by which this is effected; the energy by which the will performs so extraordinary an operation, of this we are so far from being immediately conscious, that it must forever escape our most diligent inquiry." We certainly agree with Mr. Hume, that "the influence of the will cannot be foreseen from any apparent energy or power in the cause; because, this would be to look at the operations of the mind with the eyes. Here Mr. Hume confounds consciousness with perception; and applies language to the former, which has been formed to express the operations of the latter, and has no meaning, when applied to the former. But is he not all the while proving by his own argument, that we are conscious of power over our bodily organs? And does not this give us the idea of power? No, says he, because "we are not conscious of the means by which it is effected." But, no one pretends to such knowledge; for it involves the nature of the union between soul and body, between spirit and matter; and if this is an objection to one instance

of knowledge derived through consciousness, it is an objection to all our knowledge derived thro' that source; for in no instance are we conscious of the *modus operandi* of mind. We are conscious of thinking, and of controlling the current of our thoughts; but of the means by which the operation is effected, or of the manner in which the brain is the organ of the mind, we are utterly ignorant; but will any man in his senses, pretend that we have no idea of thought, or of mind?—Such a notion would not be skepticism but consummate nonsense. We might just as well deny that we have any idea of perception, because we do not know the means of its operation; and thus shut up all sources of knowledge at once; for we have no more knowledge of the manner in which the mind communicates with the external world, than we have how it exercises power over our bodily organs. Throughout the whole of these objections, Mr. Hume seems to think that we cannot have an idea of any thing but what we can see and handle; that the only real ideas are those derived through the senses, for the language he applies to consciousness, has no meaning except upon this supposition.

It will now appear how the doctrine of cause and effect is connected with the evidences of natural theology. If the idea of power or cause is not derived from consciousness of power in ourselves, then the idea of the final cause or power is not derived ultimately from reflecting upon our own minds, and God cannot therefore, be classed under the same genus or species with man, so that we can reason from the one to the other; and then all the evidences of natural theology must rest

ultimately upon the doctrine of customary conjunction. Upon this foundation the evidences of natural theology must fail; because we know of but one instance of conjunction between such a cause and effect,—the present creation; and the doctrine of customary conjunction, is that no one instance can suggest the idea of power, but that it requires many instances to do it. Mr. Hume, throughout his argument on a particular providence and a future state, covertly assumes this position, though he does not push it out to its ultimate conclusions; for it would go the full length of denying the existence of any God at all, which he seems to have avoided merely for the purpose of thereby better sustaining the skeptic character of never asserting any thing positively; for it is evident from his writings, that he foresaw this conclusion as resulting from his principles of evidence in regard to cause and effect.—His doctrine is, that cause and effect are nothing more than the constant conjunction or succession of two facts or phenomena; and that the antecedent fact does not produce or exercise any power over the sequent fact, and that in reality, there is no causation in such cases, but that it is the mere association of ideas arising from the constant conjunction of the facts that leads us to imagine that there is an operating principle or power in the antecedent fact. We see by this mere statement, that if God be like a physical cause, he must according to Mr. Hume's doctrine be merely imaginary, even if there were as many instances of conjunction between such a cause and its effect, as between any other cause and effect. This doctrine then leads to atheism; and does not stop short at a God of limited

powers, as Mr. Hume has done in his essay on a Particular Providence and a Future State. But will it make any material change in the theological doctrine, if we consider the cause or antecedent fact as containing an operative principle which produces the effect or sequent fact? If we liken God to a blind agency in matter, such as this doctrine of cause and effect teaches, we cannot upon any principle of sound induction, consider him any thing else than a mere vis formativa, operative through the universe, which is the doctrine of pantheism. "God," says Prof. Michellet, a pantheist of Germany, "is the eternal movement of the universal principle constantly manifesting itself in individual existences, and which has no true objective existence, but in these individuals which pass away again into the infinite." To this notion of God, must the doctrine, that a physical cause contains an operative principle, lead, if we make causes the foundation of our inferences in regard to God. We see, then, that upon neither doctrine of cause and effect, can God be likened to a physical cause; for the first leads to atheism, and the other to pantheism, which is in fact atheism too. But if we lay causation in consciousness, the evidences of natural theology are impregnable; because then, instead of being driven to the necessity of confounding God with a mere physical cause, (bringing them under the same class) and reasoning from one to the other, we bring God under the same class (that of intelligent agents) with man, and reason from an intelligent agent to an intelligent agent. Because in this view of causation, we resolve every mechanical cause ultimately into the direct agency of an

intelligent being; for the only instance of direct causation of which we have any knowledge, is that of the exercise of force by ourselves and by other men, over matter. And this would perhaps be accounting for every instance of causation in the universe; for so very large a portion of the phenomena of the universe have already been traced up to the exertion of mechanical force, as to lead philosophers to believe, that mechanical force is the only cause capable of acting on material beings, and that, of course, all other causes, when better understood, will be ascertained to be nothing more than the exercise of mechanical force. With this view then, of causation, and basing the evidences of natural theology on the contrivances, adaptations of means to ends, the order and harmony of the universe, we have throughout the whole inquiry,—never losing sight of it for a moment—the idea that God is a personal intelligent being, distinct from his creatures, both animate and inanimate, in his essence, and acts, and consciousness; and not a mere cause, of which the universe is the phenomena. On this foundation, natural theology teaches the notion of such a God as we can address as “Our father who art in heaven.”

The argument of Mr. Hume, which we have been considering, is certainly subtle and ingenious in the extreme, but he views things too much through the little pin-hole of his skeptical creed, to let in upon his mind, light from all parts of his subject; and in presenting his partial views to others, he gives them such bold relief, by the bright coloring of his admirable rhetoric, as to cast the other parts of his subjects, completely into the shade. In his philosophical writings, therefore, we

never see a complete picture; yet what we do see, exhibits the touches of a master; for however imperfect the picture may be as a likeness, it has nothing of the daubing of the pretender.

If what we have gleaned, from this field of evidence which has been harvested home by the master minds of the past and present century, shall contribute any thing to the truths of natural theology, we will rejoice; for it were better that the sun were smitten from the firmament, and all creation covered in darkness, so that we could not read one word in the great book of nature, than that a false and impious philosophy should tear out the sacred chapter of final causes. If we did not know that some Christian philosophers excluded natural theology from amongst the sciences, we would have supposed such doctrine to be the mere offal of philosophy scraped up from around the style of some blasphemous infidel. What! God write a book in defence of atheism. It must be so, if nature tells nothing of him. Must creation cease to declare the glory of him who spread out the heavens, and will roll them up as a scroll? The desolate soul of the misanthrope atheist, may answer "yes;" but Newton has given the response of the true philosopher.

THE END.

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